

# Montana Water Supply Outlook Report January 1, 2014



**Picture: Madison Plateau SNOTEL Site near West Yellowstone**

# Water Supply Outlook Report

## and Federal - State - Private Cooperative Snow Surveys

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### *How forecasts are made*

Most of the annual streamflow in the Western United States originates as snowfall that has accumulated high in the mountains during winter and early spring. As the snowpack accumulates, hydrologists estimate the runoff that will occur when it melts. Predictions are based on careful measurements of snow water equivalent at selected index points. Precipitation, temperature, soil moisture and antecedent streamflow data are combined with snowpack data to prepare runoff forecasts. Streamflow forecasts are coordinated by Natural Resources Conservation Service and National Weather Service hydrologists. This report presents a comprehensive picture of water supply conditions for areas dependent upon surface runoff. It includes selected streamflow forecasts, summarized snowpack and precipitation data, reservoir storage data, and narratives describing current conditions.

Snowpack data are obtained by using a combination of manual and automated SNOTEL measurement methods. Manual readings of snow depth and water equivalent are taken at locations called snow courses on a monthly or semi-monthly schedule during the winter. In addition, snow water equivalent, precipitation and temperature are monitored on a daily basis and transmitted via meteor burst telemetry to central data collection facilities. Both monthly and daily data are used to project snowmelt runoff.

Forecast uncertainty originates from two sources: (1) uncertainty of future hydrologic and climatic conditions, and (2) error in the forecasting procedure. To express the uncertainty in the most probable forecast, four additional forecasts are provided. The actual streamflow can be expected to exceed the most probable forecast 50% of the time. Similarly, the actual streamflow volume can be expected to exceed the 90% forecast volume 90% of the time. The same is true for the 70%, 30%, and 10% forecasts. Generally, the 90% and 70% forecasts reflect drier than normal hydrologic and climatic conditions; the 30% and 10% forecasts reflect wetter than normal conditions. As the forecast season progresses, a greater portion of the future hydrologic and climatic uncertainty will become known and the additional forecasts will move closer to the most probable forecast.

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# Montana Water Supply Outlook Report as of January 1, 2014

The cold temperatures this autumn have played a pivotal role in preserving the meager mountain precipitation received, most specifically during October. Mountain precipitation during October amounted to only 82 percent of average while snowpack from that same precipitation stacked up to 146 percent of average. Because little precipitation typically falls in the form of snow this during October, this October's snowpack normals are higher than the comparable liquid precipitation normal during that same time period. With nearly half of the snowpack accumulation season reaming this winter, early streamflow prospects are close to normal with conditions looking most favorable in the central mountains of Montana.

## Snowpack

October snowfall placed the vast majority of the state well ahead of normal. On November 1 this year statewide snowpack was ranked 6 of the last 34 years. On that same date snowpack east of the continental divide was the second highest snowpack back to 1981. Since then snowpack has not maintained those same high standards, but accumulations have been on par and thus remain above normal. Snowpack on January 1 west of the continental divide is just below average while east of the divide is above average. Snow in the Crazy, Bridger, Castle, Belt and Big Snowy Mountains are the best in the state ranging from 167 percent of average in the Bridgers to 142 percent of average in the Belts.

River Basin	% of Median	This Year % of Last Year
Columbia	103	101
Kootenai	98	83
Flathead	114	108
Upper Clark Fork	106	105
Bitterroot	91	101
Lower Clark Fork	88	91
Missouri	118	110
Missouri Headwaters	112	102
Jefferson	118	108
Madison	104	97
Gallatin	119	103
Missouri Mainstem	129	134
Headwaters Mainstem	123	127
Smith-Judith Musselshell	146	149
Sun-Teton-Marias	104	111
Milk (Bearpaw Mountains)	203	350
St. Mary	106	94
St. Mary & Milk	124	105
Yellowstone	121	123
Upper Yellowstone	121	115
Lower Yellowstone	120	132
Statewide	111	109

## Precipitation

Year-to-date precipitation is currently below normal for the state at 91 percent of average with only December precipitation reaching the average mark at 108 percent. The Yellowstone boasts the best precipitation this year so far at 134 percent of average. The Missouri and Columbia in Montana are faring worse at 93 and 76 percent of average respectively. Although below average in most watersheds, the wettest months are yet to come during May, June and July. These months typically have a large influence on the yearly total and may provide enough precipitation to make up the deficit.

River Basin	This Water Year % of Average	This Water Year % of Last Year
Columbia	76	60
Kootenai	70	52
Flathead	87	64
Upper Clark Fork	78	69
Bitterroot	74	64
Lower Clark Fork	65	50
Missouri	93	78
Jefferson	86	80
Madison	94	84
Gallatin	102	93
Headwaters Mainstem	89	71
Smith-Judith Musselshell	106	87
Sun-Teton-Marias	80	60
Milk	106	67
St. Mary	80	53
St. Mary & Milk	91	59
Yellowstone	134	116
Upper Yellowstone	112	107
Lower Yellowstone	173	115
Statewide	91	74

## Reservoirs

State-wide reservoir storage was 104 percent of average and 99 percent of last year. Reservoir storage west of the divide was 118 percent of average and 105 percent of last year. East of the Divide, reservoir storage was 98 percent of average and 96 percent of last year.

River Basin	% of Average	Current as % of Last Year
Columbia	118	105
Kootenai	127	116
Flathead	112	96
Upper Clark Fork	97	93
Bitterroot	132	99
Lower Clark Fork	98	97
Missouri	97	96
Missouri Headwaters	99	91
Jefferson	76	74
Madison	111	99
Gallatin	110	103
Missouri Mainstem	97	96
Headwaters Mainstem	97	96
Smith-Judith Musselshell	106	87
Sun-Teton-Marias	96	97
Milk	149	120
St. Mary	108	53
St. Mary & Milk	139	97
Yellowstone	112	106
Upper Yellowstone	111	94
Lower Yellowstone	112	107
Statewide	104	99

## Streamflow

State-wide, streamflows are forecast to be 99 percent of average. West of the divide streamflows are forecast to be 98 percent of average and east of the divide are forecast to be 101 percent of average.

Following are streamflow forecasts for the period April 1 through July 31. THE FIGURES IN THE TABLE BELOW ARE AN AVERAGE OF ALL FORECASTS WITHIN THE PARTICULAR BASIN AT THE 50 PERCENT EXCEEDANCE ONLY. FOR FORECASTS ABOVE AND BELOW THE 50 PERCENT EXCEEDANCE, LOOK TO THE SPECIFIC BASIN REPORTS.

April-July Streamflow Forecast Period		
River Basin	Forecast as % of Normal	This Year Forecast as % of Last Year Streamflow
Columbia	98	97
Kootenai	87	72
Flathead	102	93
Upper Clark Fork	102	126
Bitterroot	99	130
Lower Clark Fork	100	126
Missouri	97	137
Missouri Headwaters	94	168
Jefferson	93	208
Madison	92	128
Gallatin	101	141
Missouri Mainstem	98	130
Headwaters Mainstem	98	132
Smith-Judith Musselshell	140	261
Sun-Teton-Marias	90	97
Milk	97	93
St. Mary	94	87
St. Mary & Milk	94	87
Yellowstone	105	140
Upper Yellowstone	102	129
Lower Yellowstone	108	149
Statewide	99	118

## Surface Water Supply Index

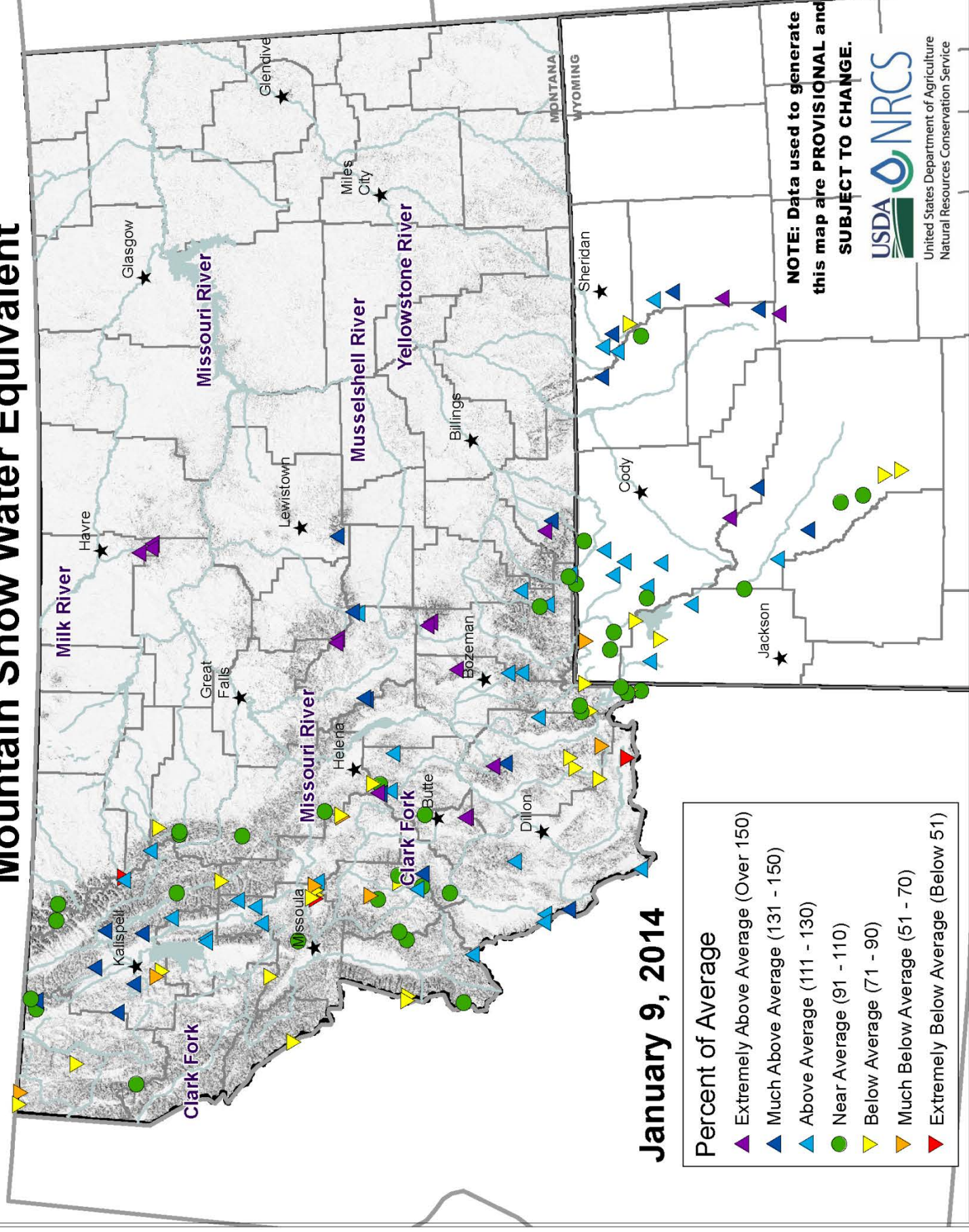
The Surface Water Supply Index (SWSI) is a measure of available surface water availability for the spring and summer months. Water users that rely on mountain precipitation can use the index to evaluate seasonal surface water supplies. The SWSI accounts for mountain snowpack, mountain precipitation, streamflow, reservoir storage, and soil moisture.

SWSI Scale	
+3.0 to +4.0	Extremely Wet
+2.0 to +2.9	Moderately Wet
+1.0 to +1.9	Slightly Wet
+0.9 to -0.9	Near Average
-1.0 to -1.9	Slightly Dry
-2.0 to -2.9	Moderately Dry
-3.0 to -4.0	Extremely Dry

This Year's SWSI	Last Year's SWSI	Watershed
-1.3	+0.8	Tobacco River
-1.0	+0.6	Kootenai Ft. Steele to Libby Dam
+0.9	+1.3	Kootenai River below Libby Dam
-0.7	+1.0	Fisher River
-2.2	+2.7	Yaak River
-0.7	+1.3	North Fork Flathead River
-0.1	+1.6	Middle Fork Flathead River
2.7	+3.1	South Fork Flathead River
+0.4	+1.7	Flathead River at Columbia Falls
+1.2	-0.4	Swan River
+0.5	+1.2	Flathead River at Polson
-0.1	-1.6	Mission Valley
+1.8	+1.7	Little Bitterroot River
-0.1	0.0	Clark Fork River above Milltown
+0.1	+0.2	Clark Fork River above Missoula
0.0	0.0	Blackfoot River
0.0	+0.1	Bitterroot River
+0.1	+0.2	Clark Fork River below Bitterroot River
+0.4	+0.8	Clark Fork River below Flathead River
-2.0	-0.3	Beaverhead River
-0.7	-0.7	Ruby River
-0.1	-0.9	Big Hole River
-0.4	-1.2	Boulder River (Jefferson)
+0.7	+0.5	Jefferson River
-0.5	+0.2	Madison River
-0.4	-0.8	Gallatin River
+0.2	+0.2	Missouri River above Canyon Ferry
0.0	+0.1	Missouri River below Canyon Ferry
+2.8	+1.3	Smith River
-2.2	-0.4	Sun River
-0.2	+0.4	Teton River
-2.5	-2.4	Birch/Dupuyer Creeks
+3.8	+1.5	Upper Judith River
-1.2	-1.3	Marias River above Tiber
-0.3	+1.3	Marias River below Tiber
+1.4	+0.7	Musselshell River
+0.7	+0.6	Missouri River above Ft. Peck
-1.4	-1.1	Missouri River below Ft. Peck
-0.5	+1.8	St. Mary River
+1.4	----	Milk River
-1.4	-1.0	Dearborn River near Craig
+0.2	+0.4	Yellowstone River above Livingston
+2.2	-1.1	Shields River
+0.3	+0.1	Boulder River (Yellowstone)
-0.8	-0.9	Stillwater River
-0.4	----	Rock/Red Lodge Creeks
+0.5	-0.2	Clarks Fork River
+0.1	+0.1	Yellowstone River above Bighorn River
+0.2	-0.3	Bighorn River below Bighorn Lake
-0.3	-3.1	Little Bighorn River
+0.2	-0.1	Yellowstone River below Bighorn River
+1.7	-2.0	Tongue River
+1.7	-0.5	Powder River

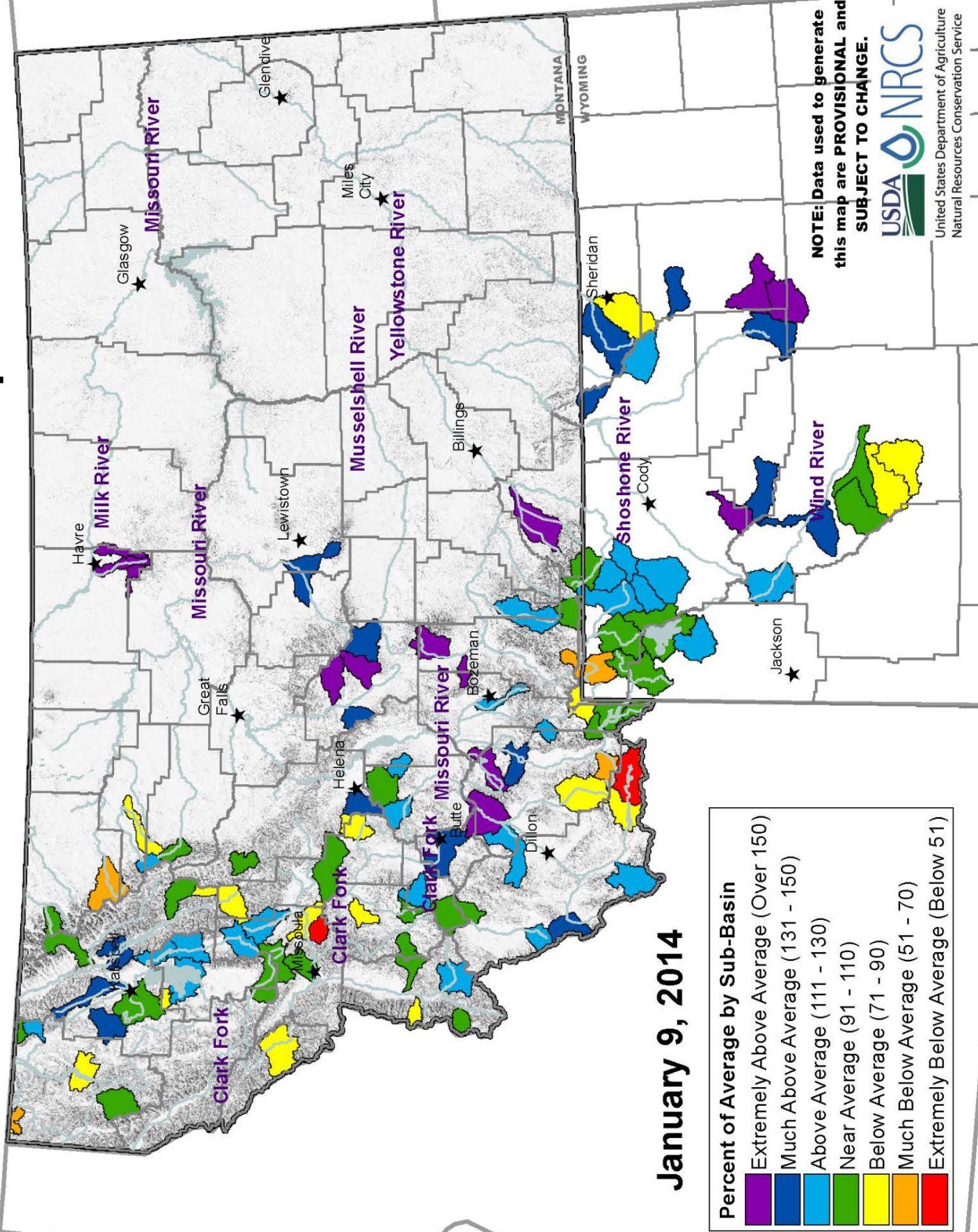


# Mountain Snow Water Equivalent



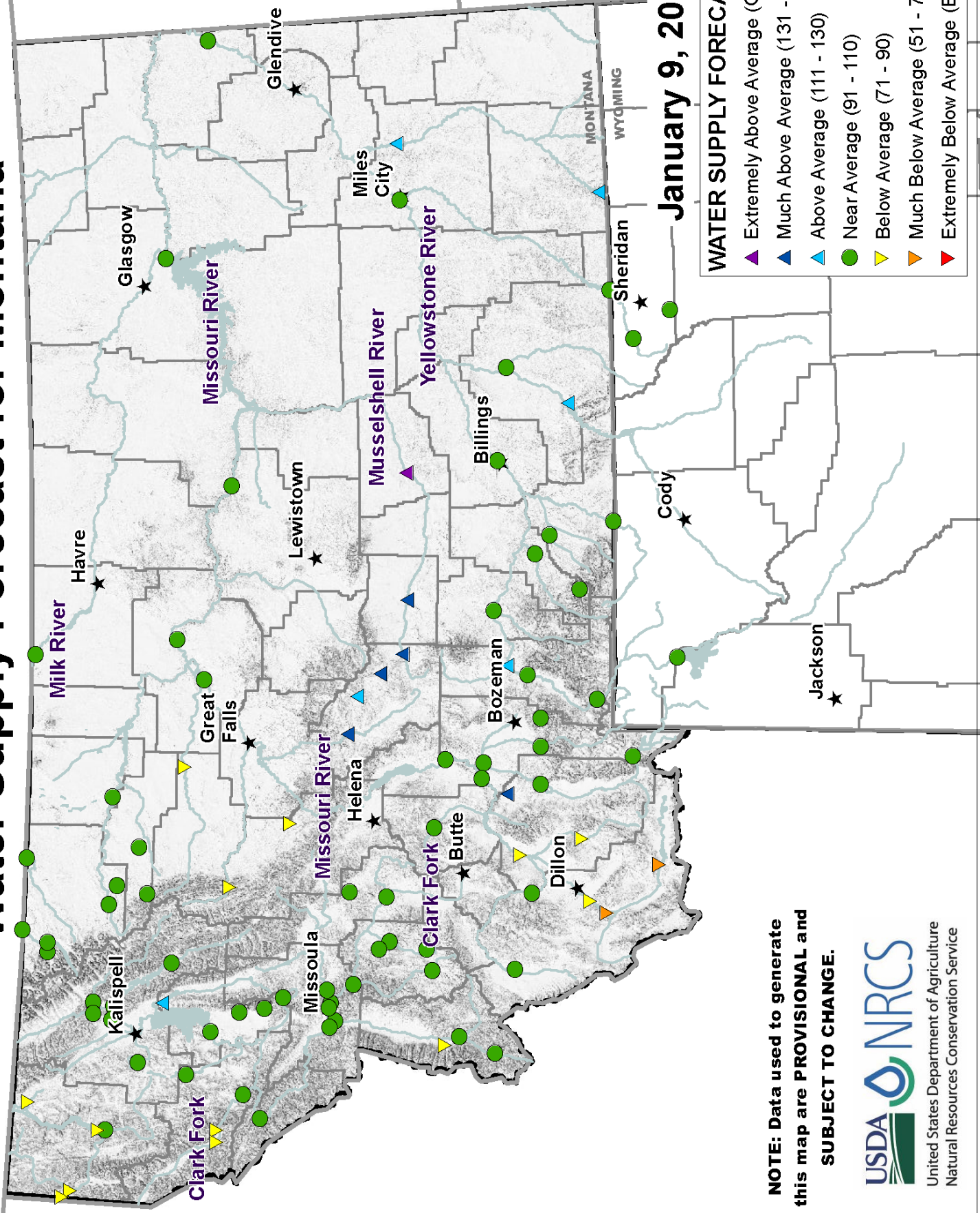


# Mountain Snow Water Equivalent





# Water Supply Forecast for Montana

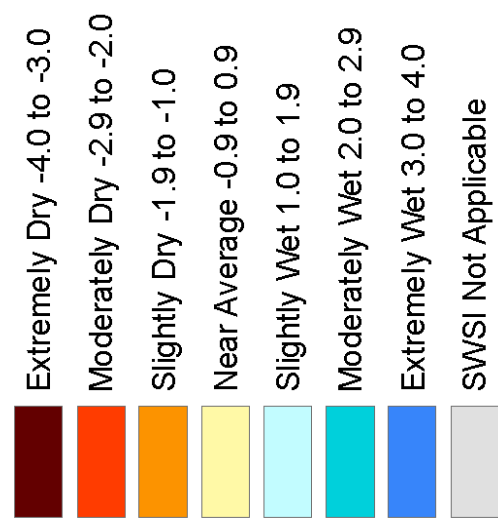
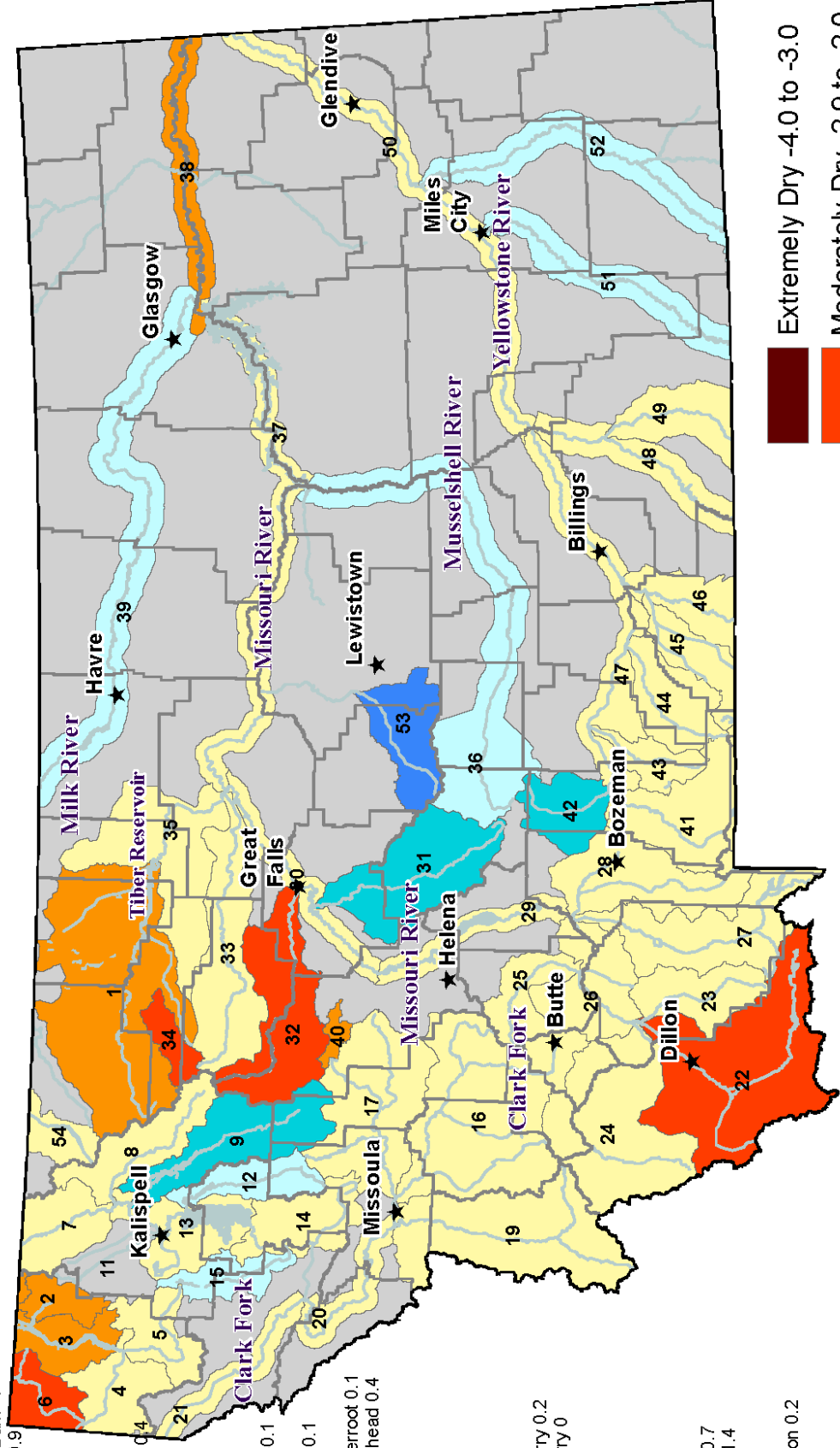


**NOTE:** Data used to generate this map are **PROVISIONAL** and **SUBJECT TO CHANGE.**

# RIVER INDEX & SWSI VALUES

- 1 Marias above Tiber Reservoir -1.2
- 2 Tobacco -1.3
- 3 Kootenai Ft. Steele to Libby Dam -1
- 4 Kootenai below Libby Dam 0.9
- 5 Fisher -0.7
- 6 Yaak -2.2
- 7 North Fk. Flathead -0.7
- 8 Middle Fk. Flathead -0.1
- 9 South Fk. Flathead 2.7
- 10 Flathead at Columbia Falls 0.4
- 11 Stillwater/Whitfish Rivers
- 12 Swan 1.2
- 13 Flathead at Polson 0.5
- 14 Mission Valley -0.1
- 15 Little Bitterroot 1.8
- 16 Clark Fork above Milltown -0.1
- 17 Blackfoot 0
- 18 Clark Fork above Missoula 0.1
- 19 Bitterroot 0
- 20 Clark Fork River below Bitterroot 0.1
- 21 Clark Fork River below Flathead 0.4
- 22 Beaverhead -2
- 23 Ruby -0.7
- 24 Big Hole -0.1
- 25 Boulder (Jefferson) -0.4
- 26 Jefferson 0.7
- 27 Madison -0.5
- 28 Gallatin -0.4
- 29 Missouri above Canyon Ferry 0.2
- 30 Missouri below Canyon Ferry 0
- 31 Smith 2.8
- 32 Sun -2.2
- 33 Teton -0.2
- 34 Birch/Dupuyer Creeks -2.5
- 35 Marias -0.3
- 36 Musselshell 1.4
- 37 Missouri above Fort Peck -0.7
- 38 Missouri below Fort Peck -1.4
- 39 Milk 1.4
- 40 Dearborn near Craig -1.4
- 41 Yellowstone above Livingston 0.2
- 42 Shields 2.2
- 43 Boulder (Yellowstone) 0.3
- 44 Stillwater -0.8
- 45 Rock/Red Lodge Creeks -0.4
- 46 Clarks Fork Yellowstone 0.5
- 47 Yellowstone above Bighorn River 0.1
- 48 Bighorn below Bighorn Lake 0.2
- 49 Little Bighorn -0.3
- 50 Yellowstone below Bighorn 0.2
- 51 Tongue 1.7
- 52 Powder 1.7
- 53 Upper Judith 3.8
- 54 Saint Mary -0.5

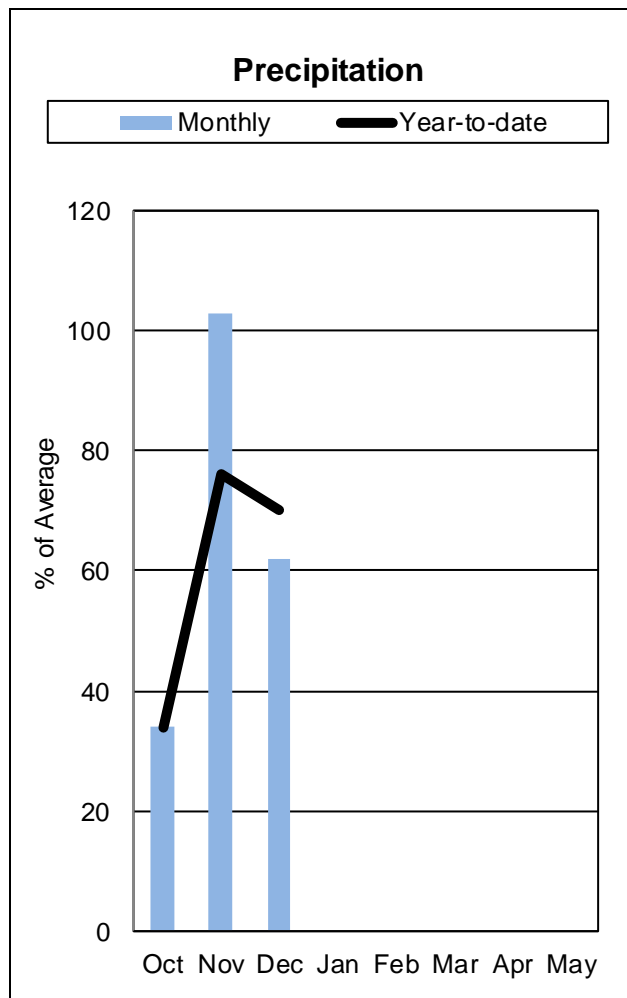
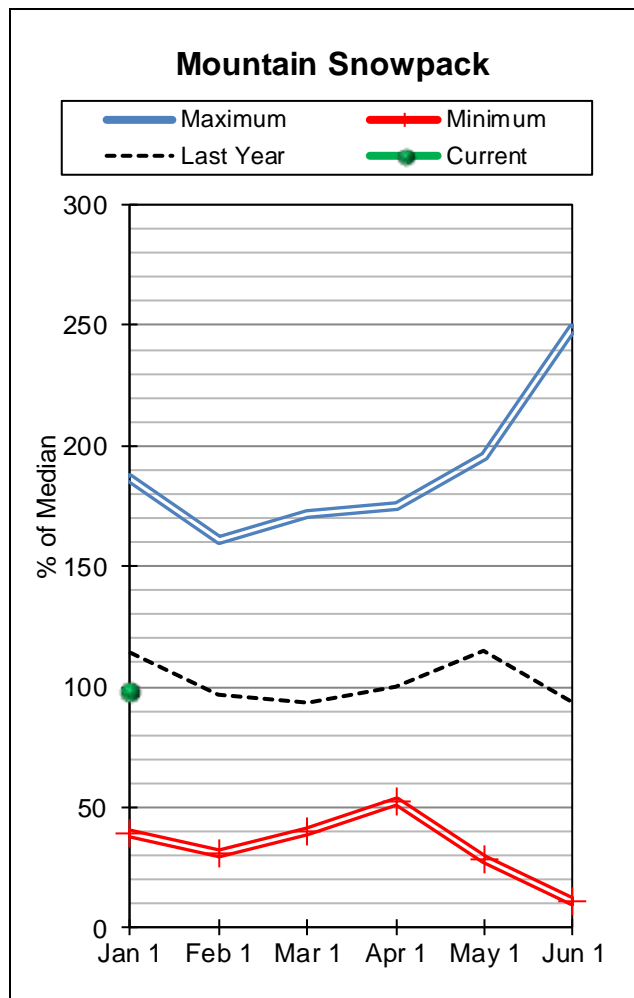
# Surface Water Supply Index (SWSI) Values



January 10, 2014

NOTE: Data used to generate this map are **PROVISIONAL** and **SUBJECT TO CHANGE.**

## Kootenai River Basin in Montana



Snow started accumulating in the Kootenai Basin around the first of November with the higher elevations starting earlier in October. Colder temperatures in December have helped to retain good snowpack at the lower to mid-elevations. Snowpack conditions as of January 1 in the basin were near normal at 98 percent of median and 85 percent of last year.

The water year precipitation for the basin started off dry with an October basin percentage of only 34. November improved substantially with a basin wide percentage of 103%. December precipitation tapered off to 62 percent of average. Precipitation from October 1, 2013 thru January 1, 2014 (year to date) is 70 percent of average and 52 percent of last year.

The end of December reservoir storage for Lake Koocanusa is 127 percent of average and 116 percent of last year.

Assuming average precipitation, April through July streamflows are forecast to be 87 percent of average.

# Kootenai River Basin In Montana

## Streamflow Forecasts - January 1, 2014

KOOTENAI RIVER BASIN in MONTANA	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Tobacco R nr Eureka	APR-JUL	63	86	102	81%	118	141	126
	APR-SEP	71	97	114	81%	131	157	140
Libby Reservoir Inflow <sup>1</sup>	APR-JUL	3480	4320	4700		5080	5920	
	APR-SEP	4270	5110	5500		5890	6730	
Fisher R nr Libby	APR-JUL	97	150	186	91%	220	275	205
	APR-SEP	107	162	199	90%	235	290	220
Yaak R nr Troy	APR-JUL	151	245	305	73%	365	460	420
	APR-SEP	168	260	325	74%	390	480	440
Kootenai R at Leonia <sup>1,2</sup>	APR-JUL	4210	5270	5750	87%	6230	7290	6600
	APR-SEP	5040	6110	6600	87%	7090	8160	7590

1) 90% and 10% exceedance probabilities are actually 95% and 5%

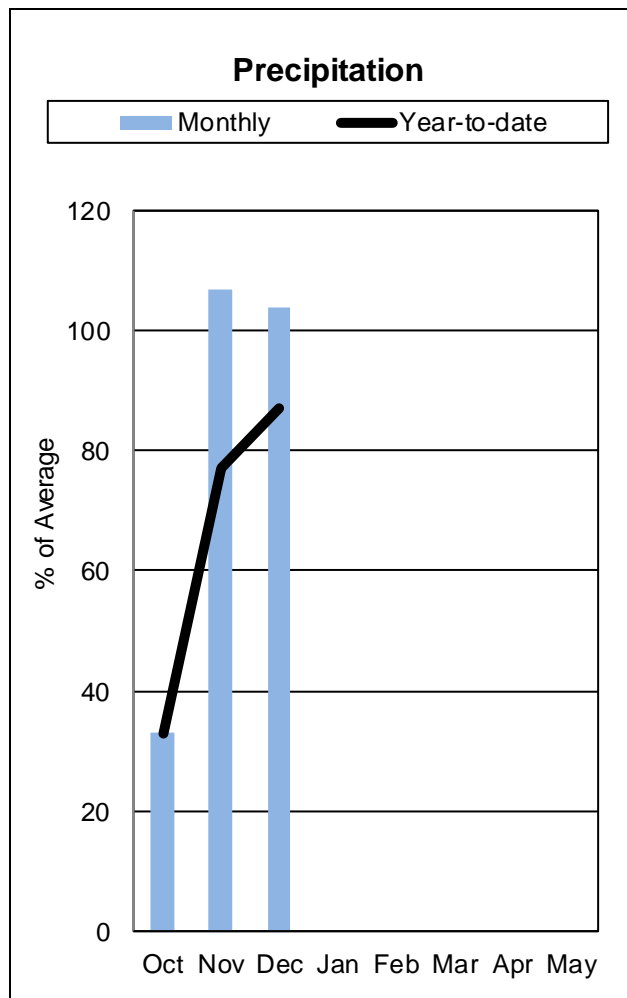
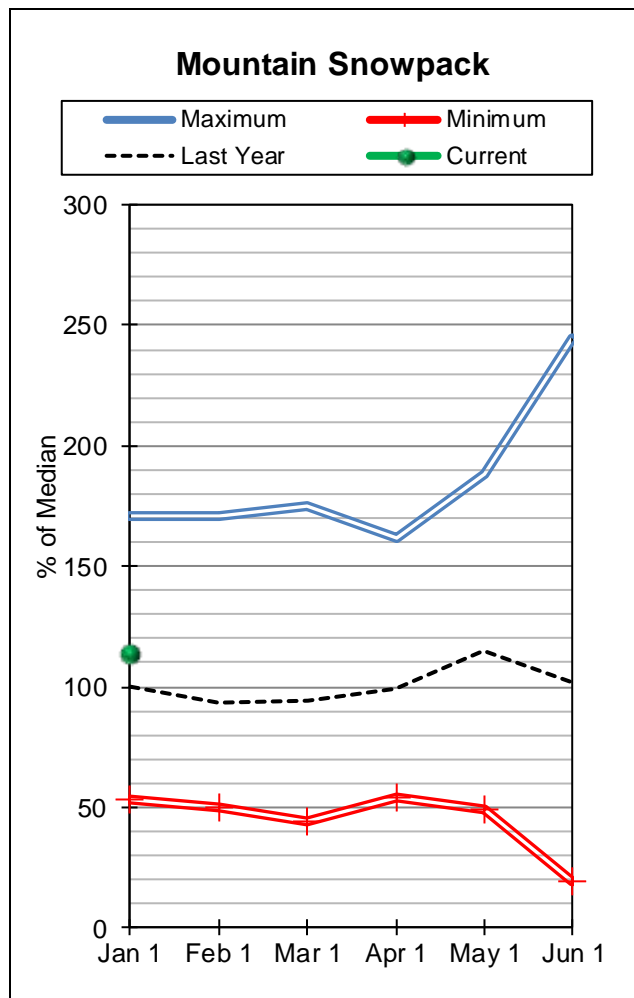
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

3) Median value used in place of average

Reservoir Storage End of December, 2013	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
LAKE KOOCANUSA	4334.7	3724.5	3417.0	5748.0
Basin-wide Total	4334.7	3724.5	3417.0	5748.0
# of reservoirs	1	1	1	1

Watershed Snowpack Analysis January 1, 2014	# of Sites	% Median	Last Year % Median
KOOTENAY in CANADA	4	95%	109%
KOOTENAI MAINSTEM	3	91%	124%
TOBACCO	3	110%	96%
FISHER	1	131%	98%
YAAK	2	77%	132%
KOOTENAI RIVER BASIN in MONTANA	9	98%	114%
KOOTENAI ab BONNERS FERRY	12	100%	110%

## Flathead River Basin



Permanent snowpack started to accumulate at the higher elevations during the first part of October with the exception of Flattop Mtn. SNOTEL site in Glacier National Park which started with the September 30 storm. In early October it appeared the snowpack was headed for a great season. However, Mother Nature slowed accumulations down during the rest of the month with the temperatures staying cooler to hold the existing high elevation snowpacks. Low and mid-elevation sites started permanent snowpack around the first part of November. The majority of sites showed above average increases for November and December. As of January 1 the snowpack conditions in the Flathead River basin were above normal at 115 percent of median and 104 percent of last year.

Similar to the Kootenai River Basin, the October precipitation was slight at only 33 percent of average. November precipitation was slightly above average at 107 percent. Precipitation at the end of December was again slightly above average at 102 percent. Year to Date precipitation (October 1 through January 1) was 87 percent of average and 64 percent of last year.

Hungry Horse Reservoir storage at the end of December was 117 percent of average and 94 percent of last year. Flathead Lake storage at the end of December was 102 percent of average and 104 percent of last year.

Assuming average precipitation, April through July streamflows are forecast to be 101 percent of average.



# Flathead River Basin

## Streamflow Forecasts - January 1, 2014

Forecast Exceedance Probabilities for Risk Assessment  
Chance that actual volume will exceed forecast

FLATHEAD RIVER BASIN	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
NF Flathead R nr Columbia Falls	APR-JUL	1080	1300	1440	94%	1580	1800	1540
	APR-SEP	1210	1440	1590	94%	1740	1970	1700
MF Flathead R nr West Glacier	APR-JUL	1140	1360	1510	101%	1660	1880	1500
	APR-SEP	1250	1480	1640	101%	1800	2030	1630
Sf Flathead R nr Hungry Horse	APR-JUL	970	1160	1280	108%	1400	1590	1180
	APR-SEP	1040	1230	1360	108%	1490	1680	1260
Hungry Horse Reservoir Inflow <sup>1,2</sup>	APR-JUL	1470	1870	2050	110%	2230	2630	1860
	APR-SEP	1570	1980	2170	110%	2360	2770	1980
Flathead R at Columbia Falls <sup>2</sup>	APR-JUL	3940	4630	5090	101%	5550	6240	5020
	APR-SEP	4320	5030	5510	101%	5990	6700	5450
Ashley Ck nr Marion <sup>2</sup>	APR-JUL	3.3	4.9	6	92%	7.1	8.7	6.5
	MAR	0.18	0.67	1	84%	1.33	1.82	1.19
Swan R nr Bigfork	APR-JUL	450	525	580	112%	635	710	520
	APR-SEP	520	605	665	112%	725	810	595
Flathead Lake Inflow <sup>1,2</sup>	APR-JUL	4120	5330	5880	101%	6430	7640	5810
	APR-SEP	4470	5750	6330	101%	6910	8190	6270
Mill Ck ab Bassoo ck nr Niarada	APR-JUL	2.1	3.4	4.3	108%	5.2	6.5	4
	APR-SEP	2.3	3.7	4.6	105%	5.5	6.9	4.4
South Crow Ck nr Ronan	APR-JUL	8.1	9.6	10.6	105%	11.6	13.1	10.1
	APR-SEP	9.2	10.9	12	103%	13.1	14.8	11.6
Mission Ck nr St. Ignatius	APR-JUL	22	24	26	104%	28	30	25
	APR-SEP	26	29	31	103%	33	36	30
SF Jocko R nr Arlee	APR-JUL	24	30	34	103%	38	44	33
	APR-SEP	28	34	38	103%	42	48	37
NF Jocko R bl Tabor Feeder Canal	APR-JUL	25	29	32	103%	35	39	31
	APR-SEP	27	31	34	103%	37	41	33

1) 90% and 10% exceedance probabilities are actually 95% and 5%

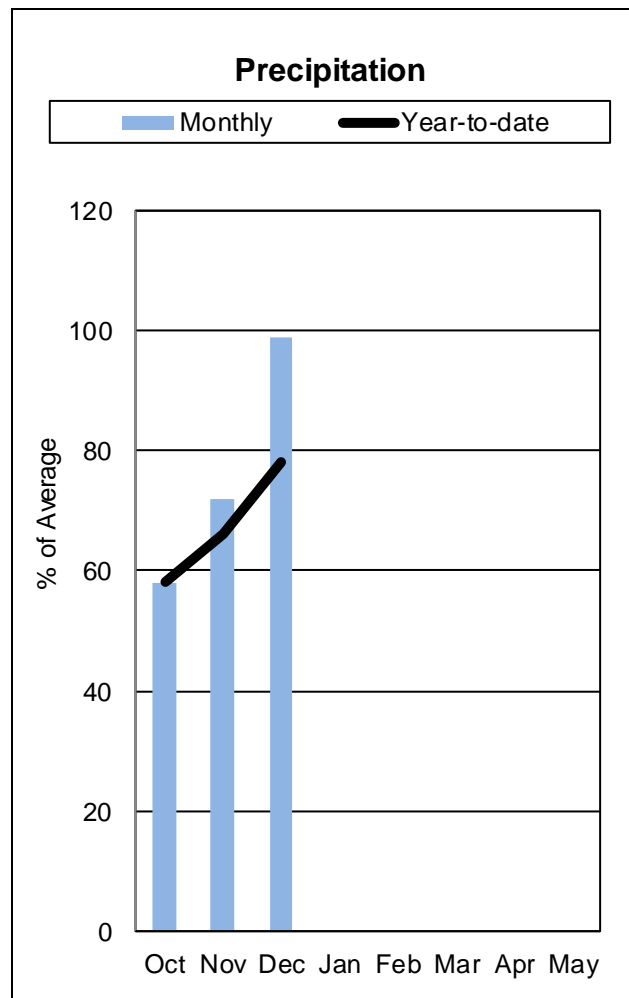
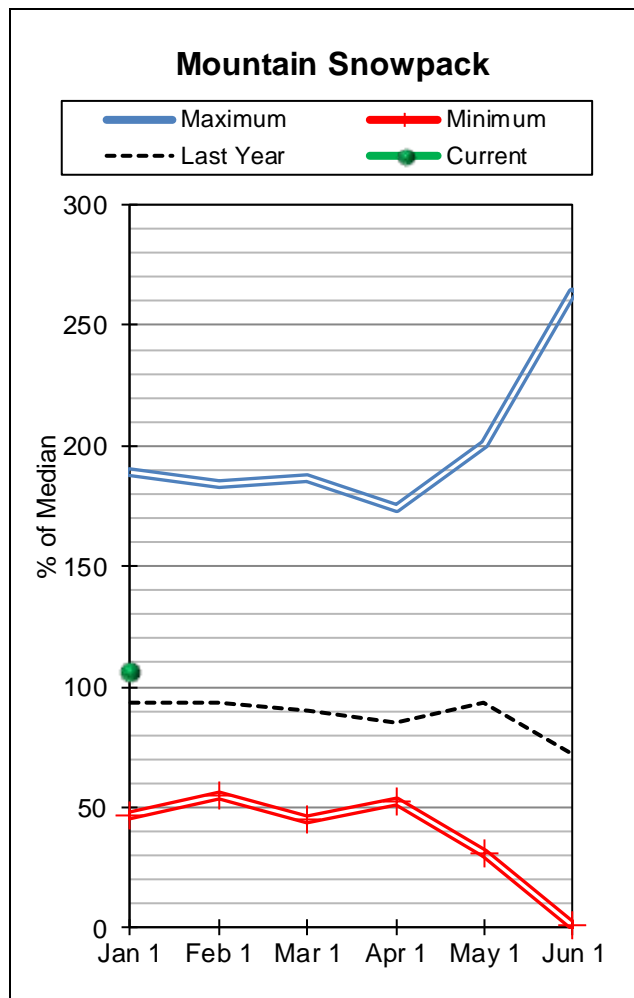
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

3) Median value used in place of average

Reservoir Storage End of December, 2013	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
CAMAS (4)	22.6	26.6	17.4	45.2
LOWER JOCKO LAKE	0.0	0.0	0.0	6.4
MISSION VALLEY (8)	25.0	23.2	30.0	100.0
HUNGRY HORSE LAKE	2959.6	3162.9	2537.0	3451.0
FLATHEAD LAKE	1180.5	1135.7	1158.0	1791.0
Basin-wide Total	4187.8	4348.4	3742.4	5393.6
# of reservoirs	5	5	5	5

Watershed Snowpack Analysis January 1, 2014	# of Sites	% Median	Last Year % Median
NF FLATHEAD in CANADA	2	93%	133%
NF FLATHEAD in MONTANA	6	113%	110%
MIDDLE FORK FLATHEAD	3	114%	114%
SOUTH FORK FLATHEAD	6	120%	102%
STILLWATER-WHITEFISH	2	133%	132%
SWAN	5	121%	101%
MISSION VALLEY	2	126%	96%
LITTLE BITTERROOT-ASHLEY	0		
JOCKO	5	121%	101%
FLATHEAD in MONTANA	6	113%	110%
FLATHEAD RIVER BASIN	20	115%	104%

## Upper Clark Fork River Basin



The Upper Clark Fork River basin is faring much better than downstream with 106 percent of normal snowpack on January 1<sup>st</sup> and 105 percent of last year. Fall and early winter precipitation at SNOTEL sites was below average at 81 percent and 111 percent of last year, with less than average liquid precipitation falling during October and into early November. Storms during November and December helped to build the snowpack in the basin and the cold temperatures of December helped retain the snowpack at low and mid elevations. The January 1<sup>st</sup> April-July forecast for the Upper Clark Fork River basin based on current data is 102 percent of average and 126 percent of the observed flows last year.

# Upper Clark Fork River Basin

## Streamflow Forecasts - January 1, 2014

Forecast Exceedance Probabilities for Risk Assessment  
Chance that actual volume will exceed forecast

UPPER CLARK FORK RIVER BASIN	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Little Blackfoot nr Garrison	APR-JUL	30	54	70	100%	86	110	70
	APR-SEP	35	60	77	100%	94	119	77
Flint Ck nr Southern Cross	APR-JUL	5.9	10	12.8	103%	15.6	19.7	12.4
	APR-SEP	6.4	11.6	15.1	103%	18.6	24	14.6
Flint Ck bl Boulder Ck	APR-JUL	27	43	54	104%	65	81	52
	APR-SEP	36	55	68	103%	81	100	66
Lower Willow Ck Reservoir Inflow <sup>2</sup>	APR-MAY	2.2	4.9	6.8	93%	8.7	11.4	7.3
	APR-JUL	2.9	7.5	10.6	100%	13.7	18.3	10.6
MF Rock Ck nr Philipsburg	APR-JUL	39	50	58	100%	66	77	58
	APR-SEP	44	57	65	100%	73	86	65
Rock Ck nr Clinton	APR-JUL	149	210	250	100%	290	350	250
	APR-SEP	176	240	285	102%	330	395	280
Clark Fork R ab Milltown	APR-JUL	250	420	535	101%	650	820	530
	APR-SEP	315	500	625	102%	750	935	615
Nevada Ck nr Helmville	APR-JUL	5.8	11.1	14.7	104%	18.3	24	14.2
	APR-SEP	5.8	11.1	14.7	104%	18.3	24	14.2
Blackfoot R nr Bonner	APR-JUL	440	615	735	102%	855	1030	720
	APR-SEP	505	690	820	103%	950	1140	800
Clark Fork R ab Missoula	APR-JUL	770	1070	1280	102%	1490	1790	1250
	APR-SEP	920	1240	1460	103%	1680	2000	1420

1) 90% and 10% exceedance probabilities are actually 95% and 5%

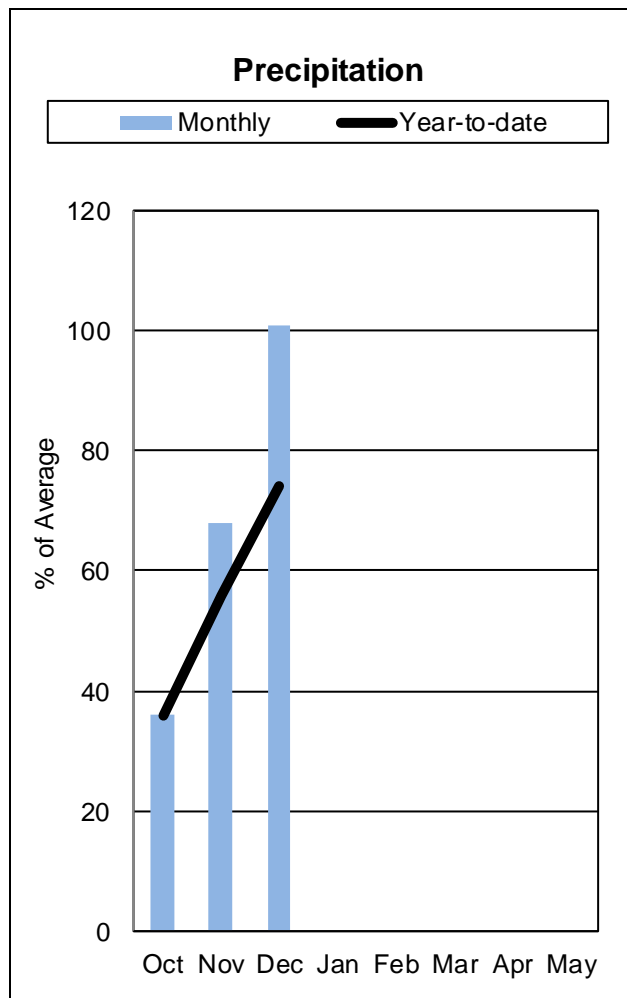
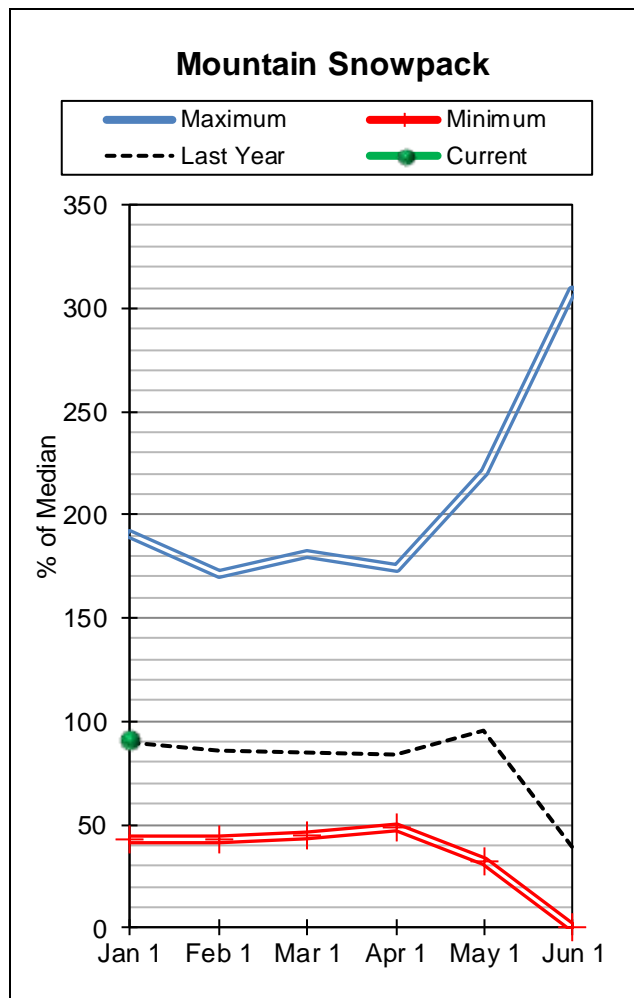
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

3) Median value used in place of average

Reservoir Storage End of December, 2013	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
EAST FORK ROCK CREEK RES	8.1	8.5	7.0	15.6
GEORGETOWN LAKE	26.6	28.1	27.8	31.0
LOWER WILLOW CREEK RESERVOIR		1.5	1.7	4.9
NEVADA CREEK RES	3.5	4.6	4.7	12.6
Basin-wide Total	38.2	42.7	41.2	64.1
# of reservoirs	3	4	4	4

Watershed Snowpack Analysis January 1, 2014	# of Sites	% Median	Last Year % Median
CLARK FORK ab FLINT CREEK	9	117%	94%
FLINT CREEK	9	117%	94%
ROCK CREEK	3	103%	106%
CLARK FORK ab BLACKFOOT	15	109%	98%
BLACKFOOT	15	109%	98%
UPPER CLARK FORK RIVER BASIN	25	106%	93%

## Bitterroot River Basin



Snowfall in the southern part of the Bitterroot River Basin got off to a healthy start in the middle part of November and into the early part of December. The area has since seen a less than favorable storm patterns which helped to drop the basin snowpack totals since then. Currently the Bitterroot River Basin is 91 percent of normal snowpack and 101 percent of last year. Precipitation data from SNOTEL sites in the basin shows 74 percent of average, but 113 percent of last year. While this year did have a slow start during October, it is still an improvement over last year's numbers. The January 1<sup>st</sup> April-July forecast for the Bitterroot River basin based on current data is 99 percent of average and 132 percent of the observed flows last year.

# Bitterroot River Basin

## Streamflow Forecasts - January 1, 2014

Forecast Exceedance Probabilities for Risk Assessment  
Chance that actual volume will exceed forecast

BITTERROOT RIVER BASIN	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
WF Bitterroot R Nr Conner <sup>2</sup>	APR-JUL	68	106	132	103%	158	196	128
	APR-SEP	74	116	144	104%	172	215	139
Bitterroot R Nr Darby	APR-JUL	230	345	420	102%	495	610	410
	APR-SEP	295	410	485	103%	560	675	470
Como Reservoir Inflow <sup>2</sup>	APR-JUL	49	60	68	89%	76	87	76
	APR-SEP	51	63	71	90%	79	91	79
Bitterroot R nr Missoula	APR-JUL	660	940	1130	98%	1320	1600	1150
	APR-SEP	745	1040	1240	99%	1440	1730	1250

1) 90% and 10% exceedance probabilities are actually 95% and 5%

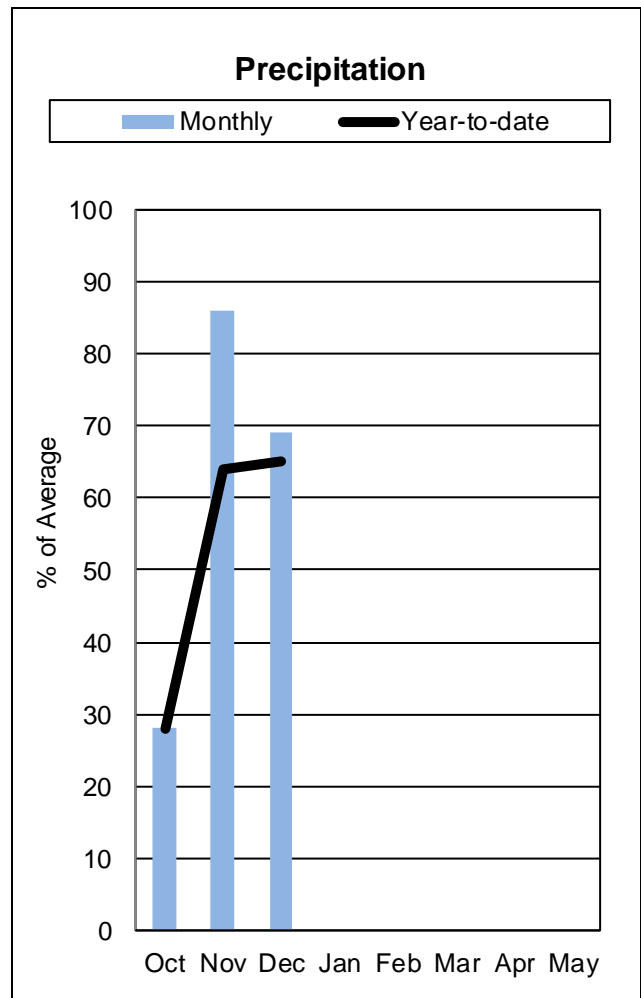
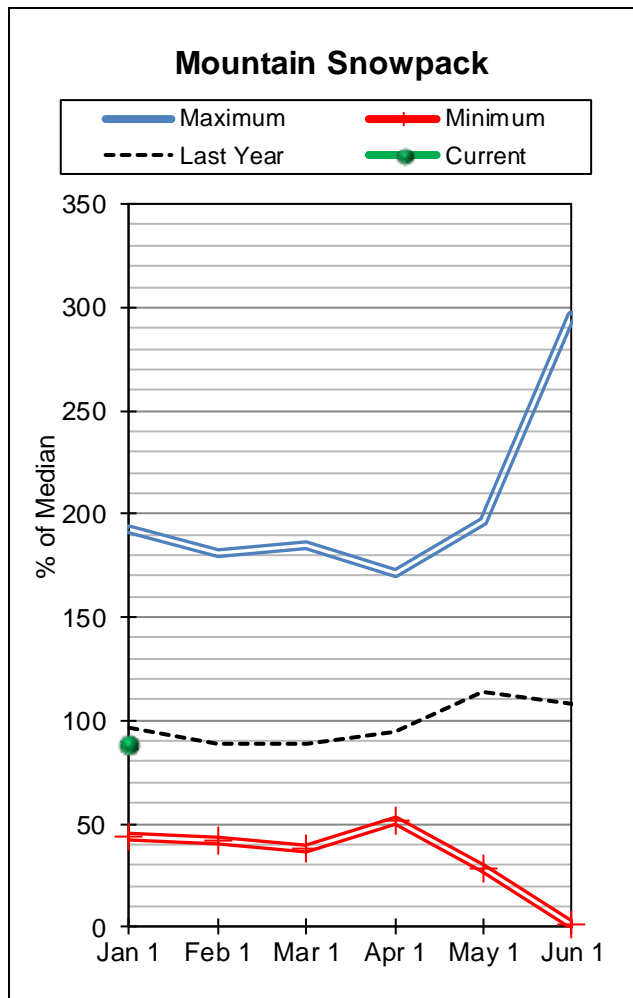
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

3) Median value used in place of average

Reservoir Storage End of December, 2013	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
PAINTED ROCKS LAKE	11.5	11.0	6.2	31.7
LAKE COMO	9.0	9.7	9.4	34.9
Basin-wide Total	20.6	20.7	15.6	66.6
# of reservoirs	2	2	2	2

Watershed Snowpack Analysis January 1, 2014	# of Sites	% Median	Last Year % Median
WEST FORK BITTERROOT	2	115%	96%
EAST SIDE BITTERROOT	3	106%	104%
WEST SIDE BITTERROOT	3	79%	81%
BITTERROOT RIVER BASIN	7	91%	90%

## Lower Clark Fork River Basin



Like most of the basins in Montana north of the Big Hole River basin along the Idaho border, the Lower Clark Fork River Basin is below average for mountain precipitation and snowfall this water year. Current snowpack measurements indicate 88 percent of normal and 91 percent of last year, the lowest in the state. Like the Bitterroot River Basin the Lower Clark Fork Basin saw a lack of fall precipitation at SNOTEL sites seeing only 65 percent of average precipitation for this water year and 51 percent of the precipitation that had fallen from Oct 1<sup>st</sup> to Jan 1<sup>st</sup> last year. The western border basins north of the Big Hole basin in Montana, as well as the basins across the border in the Idaho panhandle, need to see a significant pattern change in our weather in order to make up for the low snowpack totals and below average precipitation this year. The Lower Clark Fork Basin would need to receive 118 percent of average precipitation and 114 percent of average snowfall in order to reach average by the end of the water year. Currently reservoir storage in the basin indicates 94 percent of average capacity at this time. The January 1<sup>st</sup> April-July forecast for the Lower Clark Fork River basin based on current data is 100 percent of average and 132 percent of the observed flows last year.



## Lower Clark Fork River Basin Streamflow Forecasts - January 1, 2014

Forecast Exceedance Probabilities for Risk Assessment Chance that actual volume will exceed forecast
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LOWER CLARK FORK RIVER BASIN	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Clark Fork R bl Missoula	APR-JUL	1500	2030	2390	100%	2750	3280	2400
	APR-SEP	1750	2300	2680	100%	3060	3610	2670
Clark Fork R at St. Regis <sup>1</sup>	APR-JUL	1750	2720	3160	100%	3600	4570	3160
	APR-SEP	2060	3080	3540	101%	4000	5020	3510
Clark Fork R nr Plains <sup>1,2</sup>	APR-JUL	6410	8410	9320	101%	10200	12200	9200
	APR-SEP	7140	9240	10200	101%	11200	13300	10100
Thompson nr Thompson Falls	APR-JUL	70	117	149	82%	181	230	181
	APR-SEP	86	136	170	83%	205	255	205
Prospect Ck at Thompson Falls	APR-JUL	40	64	80	78%	96	120	102
	APR-SEP	46	70	87	79%	104	128	110
Clark Fork R at Whitehorse Rapids <sup>1,2</sup>	APR-JUL	7210	9470	10500	100%	11500	13800	10500
	APR-SEP	8140	10500	11600	101%	12700	15100	11500

1) 90% and 10% exceedance probabilities are actually 95% and 5%

2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

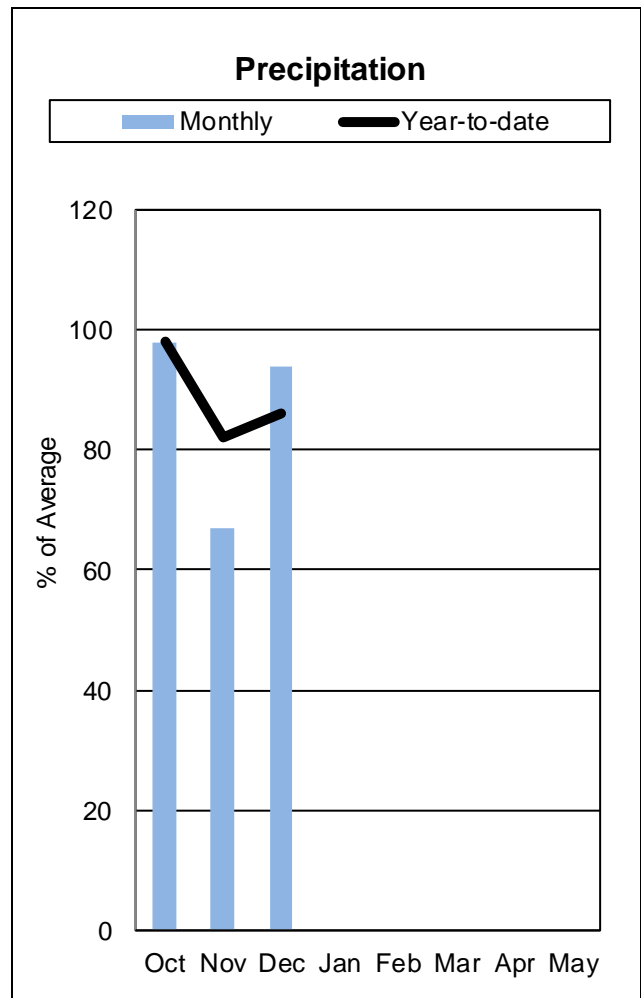
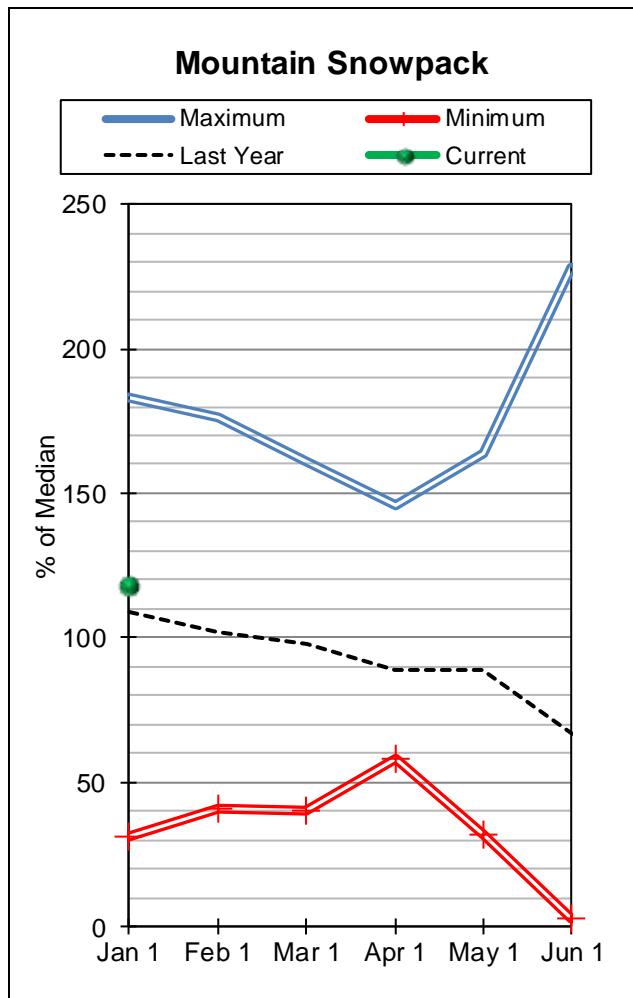
3) Median value used in place of average

Reservoir Storage End of December, 2013	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
NOXON RAPIDS RES	312.9	322.7	317.9	335.0
Basin-wide Total	312.9	322.7	317.9	335.0
# of reservoirs	1	1	1	1

Watershed Snowpack Analysis January 1, 2014	# of Sites	% Median	Last Year % Median
LOWER CLARK FORK RIVER BASIN	7	88%	96%

## Jefferson River Basin



The Jefferson River basin saw favorable storm patterns during the early winter resulting with the January 1<sup>st</sup> measurements coming in at 118 percent of average and 108 percent of last year. Areas that saw below average snowfall last year are seeing some improvement so far this water year. The Big Hole River which saw below average streamflows last year due to less than normal snowpack is currently 127 percent of normal snowpack and 117 percent of last year at this time. The lowest snowpack in the Jefferson is in the headwaters of the Ruby River Basin where snowpack is below normal and in the Centennial Range where snowpack is below to well below normal.

2014 water year precipitation in the Jefferson River basin is below average at 87 percent, and 107 percent of last year. It is important to remember that this basin is still in the process of recovering from below average years for precipitation and snowpack in the Beaverhead and Big Hole basins. Last year the lower Big Hole River had fishing restrictions in place when warm temperatures and low flows threatened fish. The January 1<sup>st</sup> April-July forecast for the Jefferson River basin based on current data is 93 percent of average and 208 percent of the observed flows last year.

# Jefferson River Basin

## Streamflow Forecasts - January 1, 2014

Forecast Exceedance Probabilities for Risk Assessment  
Chance that actual volume will exceed forecast

JEFFERSON RIVER BASIN	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Lima Reservoir Inflow <sup>2</sup>	APR-JUL	15	40	57	70%	74	99	82
	APR-SEP	12.7	41	60	67%	79	107	89
Clark Canyon Inflow <sup>2</sup>	APR-JUL	-15	28	68	67%	108	167	101
	APR-SEP	-4	41	85	71%	128	193	120
Beaverhead R at Barretts <sup>2</sup>	APR-JUL	29	47	98	76%	149	225	129
	APR-SEP	40	62	122	78%	181	270	156
Ruby R Reservoir Inflow <sup>2</sup>	APR-JUL	28	47	61	79%	74	94	77
	APR-SEP	36	58	74	81%	89	112	91
Big Hole R at Wisdom	APR-JUL	10.8	62	97	95%	132	183	102
	APR-SEP	11.4	66	103	95%	140	195	108
Big Hole R nr Melrose	APR-JUL	280	430	535	104%	640	790	515
	APR-SEP	300	465	575	103%	685	850	560
Jefferson R nr Twin Bridges <sup>2</sup>	APR-JUL	199	450	620	90%	790	1040	690
	APR-SEP	205	480	670	92%	860	1140	730
Boulder R nr Boulder	APR-JUL	34	52	64	93%	76	94	69
	APR-SEP	36	55	69	93%	82	101	74
Willow Ck Reservoir Inflow <sup>2</sup>	APR-JUL	12.2	19.2	24	143%	29	36	16.8
	APR-SEP	16.5	24	29	150%	34	42	19.3
Jefferson R nr Three Forks <sup>2</sup>	APR-JUL	260	535	720	97%	905	1180	740
	APR-SEP	285	590	795	99%	1000	1310	800

1) 90% and 10% exceedance probabilities are actually 95% and 5%

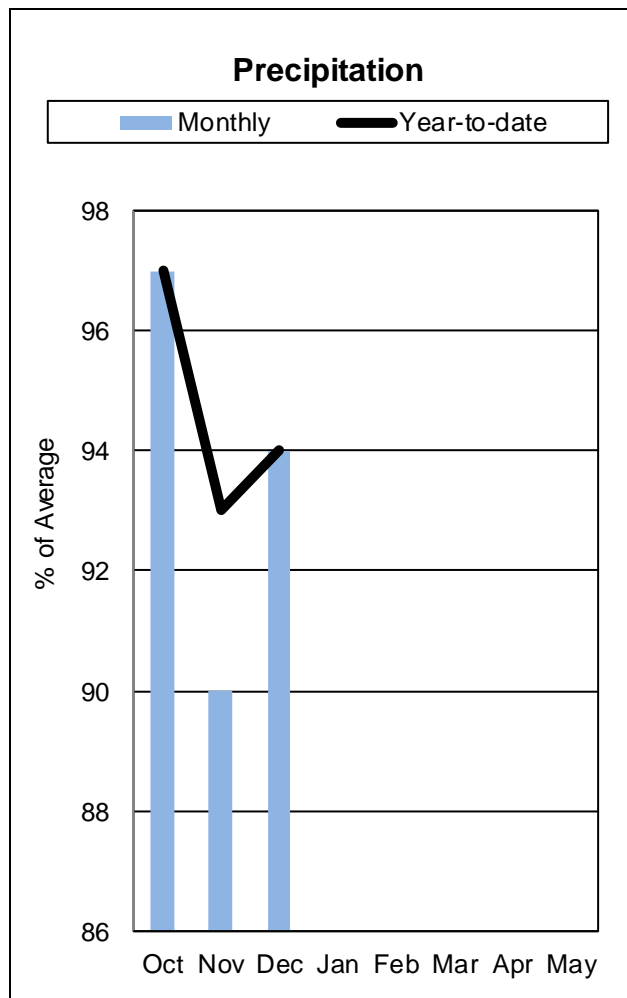
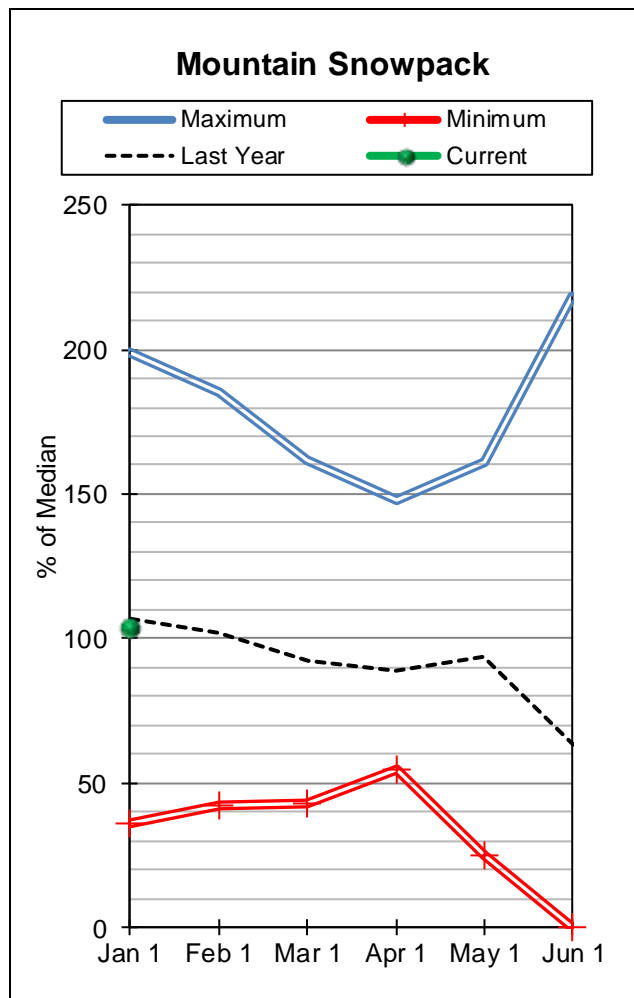
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

3) Median value used in place of average

Reservoir Storage End of December, 2013	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
LIMA RESERVOIR	21.8	37.2	27.4	84.0
CLARK CANYON RES	76.1	109.3	116.7	255.6
RUBY RIVER RESERVOIR	26.2	20.3	20.1	38.8
Basin-wide Total	124.1	166.8	164.2	378.4
# of reservoirs	3	3	3	3

Watershed Snowpack Analysis January 1, 2014	# of Sites	% Median	Last Year % Median
BEAVERHEAD	8	105%	125%
RUBY	5	124%	102%
BIGHOLE	11	131%	108%
BOULDER	5	139%	90%
JEFFERSON RIVER BASIN	23	120%	109%

## Madison River Basin



Early storms dropped an abundance of snow at the higher elevations in the lower Madison River basin with over 50 inches of snow at the beginning of December in the Tobacco Root Range, helping local backcountry skiers get out for some early season turns. Currently the Madison River basin is 104 percent of average and 97 percent of last year. The Tobacco Root Range stands out with the highest snow totals in the basin at 161 percent of normal and 151 percent of last year. Further into the headwaters of the Madison River, the January 1<sup>st</sup> measurements indicate near normal snowpack for January 1<sup>st</sup> with the exception being the Gravelly Range where the snowpack is slightly below average. The January 1<sup>st</sup> April-July forecast for the Madison River basin based on current data is 92 percent of average and 128 percent of the observed flows last year.

# Madison River Basin

## Streamflow Forecasts - January 1, 2014

Forecast Exceedance Probabilities for Risk Assessment  
Chance that actual volume will exceed forecast

MADISON RIVER BASIN	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Hebgen Reservoir Inflow <sup>2</sup>	APR-JUL	235	300	345	93%	390	455	370
	APR-SEP	305	385	435	93%	490	570	470
Ennis Reservoir Inflow <sup>2</sup>	APR-JUL	420	510	575	92%	640	730	625
	APR-SEP	525	635	710	92%	785	890	775

1) 90% and 10% exceedance probabilities are actually 95% and 5%

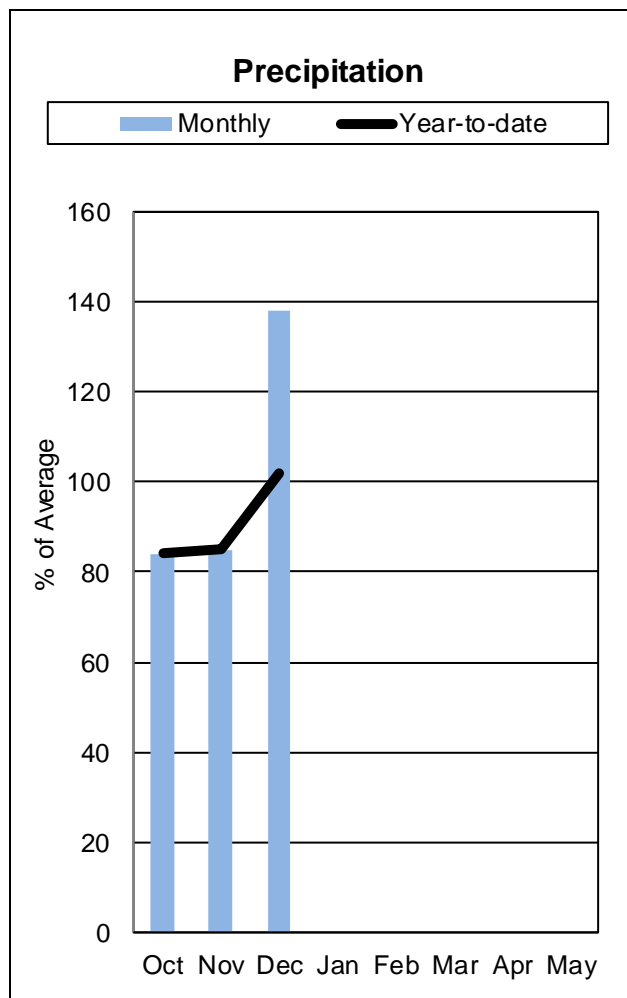
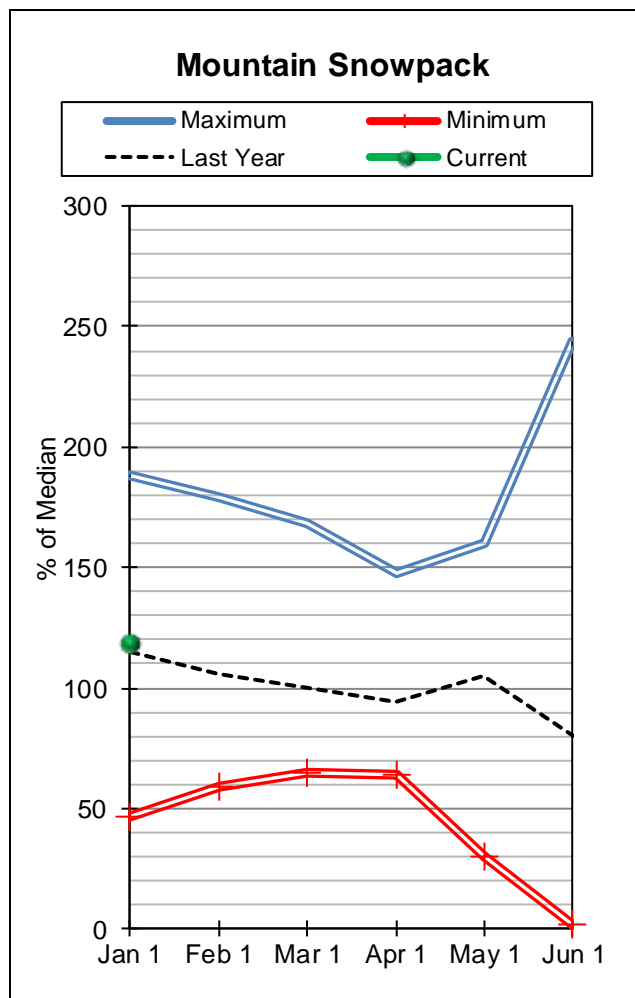
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

3) Median value used in place of average

Reservoir Storage End of December, 2013	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
ENNIS LAKE - LOWER MADISON RES	29.2	30.3	30.0	41.0
HEBGEN LAKE	318.1	319.3	283.2	377.5
Basin-wide Total	347.4	349.6	313.2	418.5
# of reservoirs	2	2	2	2

Watershed Snowpack Analysis January 1, 2014	# of Sites	% Median	Last Year % Median
MADISON abv HEBGEN LAKE	7	96%	104%
MADISON blw HEBGEN LAKE	8	110%	108%
MADISON RIVER BASIN	15	104%	106%

## Gallatin River Basin



The Gallatin River basin experienced intermittent storm patterns and cold dry air during late fall and early part of winter through January 1<sup>st</sup>, 2014. Currently the basin stands at 119 percent of normal and 103 percent of last year. The “Bridger Cloud” has been in full effect delighting Bozeman skiers since November. A storm late in the month of December boosted the Bridger Range snowpack to 179 percent of normal and 147 percent of last year, ranking second highest in the last 20 years behind 1997. Further south into the headwaters of the basin the snowpack is near to slightly above normal for January 1<sup>st</sup>. The January 1<sup>st</sup> April-July forecast for the Gallatin River basin based on current data is 101 percent of average and 145 percent of the observed flows last year.



# Gallatin River Basin

## Streamflow Forecasts - January 1, 2014

Forecast Exceedance Probabilities for Risk Assessment  
Chance that actual volume will exceed forecast

GALLATIN RIVER BASIN	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Gallatin R nr Gateway								
	APR-JUL	295	360	405	101%	450	515	400
	APR-SEP	345	420	470	100%	520	595	470
Hyalite Reservoir Inflow <sup>2</sup>								
	APR-JUL	17.2	19.7	21	105%	23	25	20
	APR-SEP	20	23	24	104%	26	29	23
Gallatin R at Logan								
	APR-JUL	260	370	445	101%	520	630	440
	APR-SEP	305	425	510	101%	595	715	505

1) 90% and 10% exceedance probabilities are actually 95% and 5%

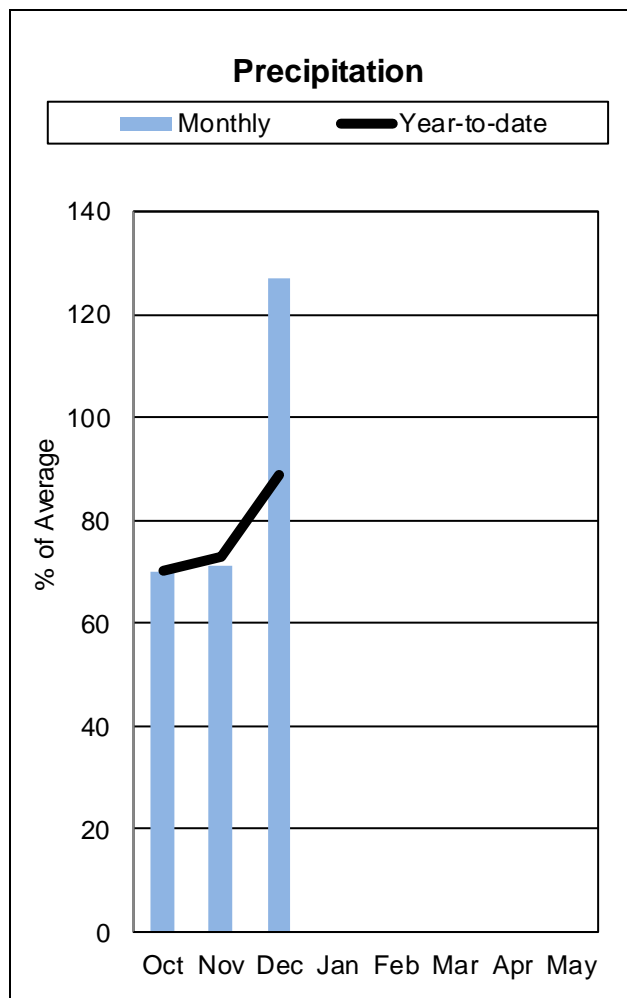
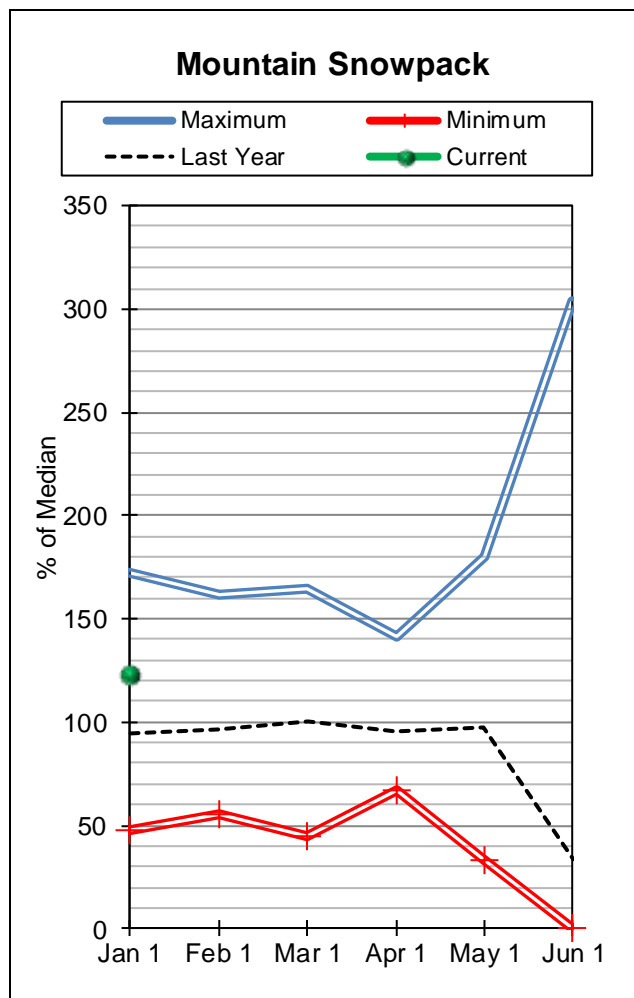
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

3) Median value used in place of average

Reservoir Storage End of December, 2013	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
MIDDLE CREEK RES	5.6	5.4	5.1	10.2
Basin-wide Total	5.6	5.4	5.1	10.2
# of reservoirs	1	1	1	1

Watershed Snowpack Analysis January 1, 2014	# of Sites	% Median	Last Year % Median
UPPER GALLATIN	4	97%	125%
HYALITE	2	116%	84%
BRIDGER	2	180%	122%
GALLATIN RIVER BASIN	8	118%	115%

## Missouri Mainstem River Basin



Snowpack conditions in the Headwaters Missouri Mainstem River Basin were near normal on January 1. Snow water content was 123 percent of median and 127 percent of last year.

Mountain precipitation during December was 127 percent of average and 128 percent of last year. Water year precipitation, beginning October 1, 2011, was 89 percent of average and 71 percent of last year.

Canyon Ferry Lake storage was 96 percent of average and 103 percent of last year; Helena Valley storage was 137 percent of average and 130 percent of last year; Lake Helena storage was 90 percent of average and 90 percent of last year; Hauser & Helena storage was 95 percent of average and 95 percent of last year; Holter Lake storage was 101 percent of average and 100 percent of last year; and Fort Peck Lake storage was 99 percent of average and 103 percent of last year.

Assuming average precipitation, April through July streamflows are forecast to average 98 percent.

# Missouri Mainstem Basin

## Streamflow Forecasts - January 1, 2014

Forecast Exceedance Probabilities for Risk Assessment  
Chance that actual volume will exceed forecast

MISSOURI MAINSTEM BASIN	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Missouri R at Toston <sup>2</sup>	APR-JUL	995	1450	1760	98%	2070	2530	1790
	APR-SEP	1150	1680	2040	99%	2400	2930	2070
Dearborn R nr Craig	APR-JUL	34	60	78	88%	96	122	89
	APR-SEP	38	66	84	88%	103	130	95
Missouri R at Fort Benton <sup>2</sup>	APR-JUL	1480	2070	2470	95%	2870	3460	2610
	APR-SEP	1780	2480	2950	95%	3420	4120	3110
Missouri R nr Virgelle <sup>2</sup>	APR-JUL	1700	2360	2810	94%	3260	3920	3000
	APR-SEP	1980	2760	3290	93%	3820	4600	3520
Missouri R nr Landusky <sup>2</sup>	APR-JUL	1820	2510	2980	94%	3450	4140	3160
	APR-SEP	2140	2950	3500	94%	4050	4860	3720
Missouri R bl Fort Peck Dam <sup>2</sup>	APR-JUL	1900	2600	3080	95%	3560	4260	3240
	APR-SEP	1960	2870	3480	94%	4100	5010	3700
Lake Sakakawea Inflow <sup>2</sup>	APR-JUL	5790	7410	8500	102%	9600	11200	8310

1) 90% and 10% exceedance probabilities are actually 95% and 5%

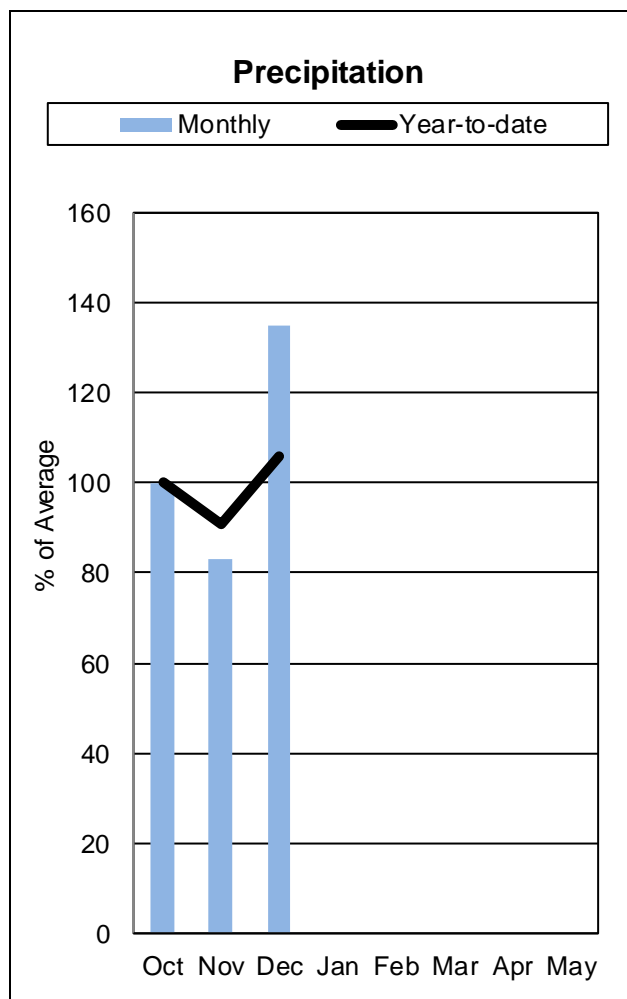
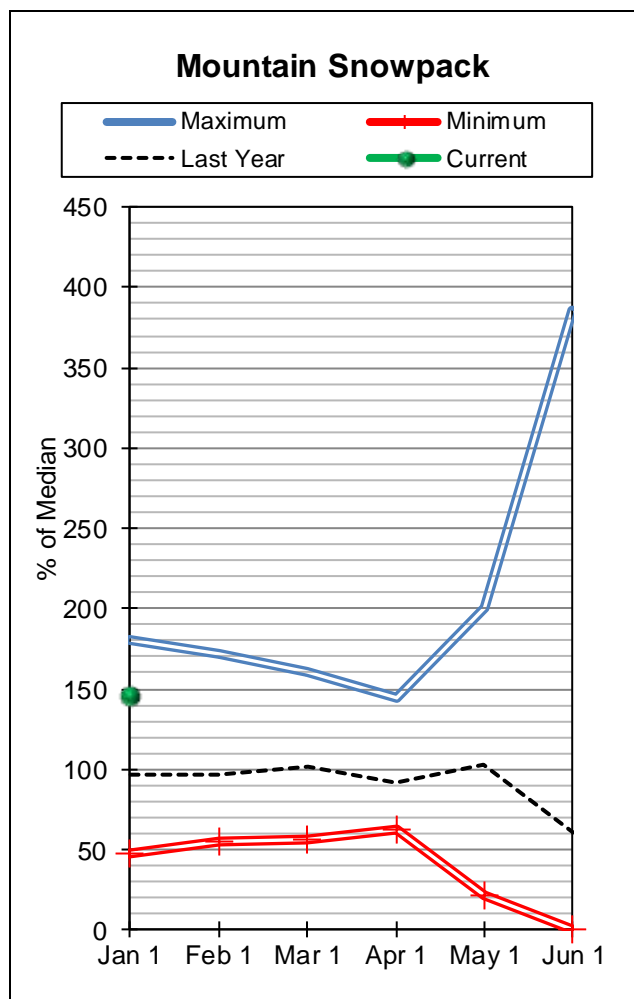
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

3) Median value used in place of average

Reservoir Storage End of December, 2013	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
CANYON FERRY LAKE	1470.1	1583.0	1598.0	2043.0
HELENA VALLEY RESERVOIR	6.4	6.1	5.1	9.2
LAKE HELENA	9.8	9.9	10.9	12.7
HAUSER LAKE & LAKE HELENA	69.8	70.0	73.8	74.6
HOLTER LAKE	81.4	81.0	80.5	81.9
FORT PECK LAKE	12845.4	13398.8	13143.0	18910.0
Basin-wide Total	14483.0	15148.8	14911.3	21131.4
# of reservoirs	6	6	6	6

Watershed Snowpack Analysis January 1, 2014	# of Sites	% Median	Last Year % Median
HEADWATERS MAINSTEM	5	119%	94%
SMITH-JUDITH-MUSSELSHELL	10	146%	98%
SUN-TETON-MARIAS	5	102%	88%
MAINSTEM ab FT PECK RES	19	126%	94%
MILK RIVER BASIN	1	210%	60%
MISSOURI MAINSTEM BASIN	20	127%	93%

## Smith-Judith-Musselshell River Basins



Central Montana mountain ranges were certainly blessed with lots of snow this fall. The majority of the SNOTEL sites throughout these basins started permanent snowpack during the first part of October with a couple of low elevation sites starting in early November. Three high elevation sites actually started with the storm that occurred on September 26. The snowpack conditions for the Smith-Judith-Musselshell River Basins as of January 1 continued to be well above normal. The Judith River Basin recorded the highest snowpacks at 152 percent of median, which was followed by the Musselshell with 147 percent of median and the Smith rounding out the Basins with 146 percent of median.

Precipitation was equally plentiful and above average during October in the Judith Basin which recorded 114 percent of average and the Musselshell at 113 percent of average. The Smith was below average at 85 percent of average. November was not as generous and was more variable with precipitation than it was with snowfall. The Smith was 98 percent of average, the Judith at 65 percent of average and the Musselshell at 64 percent of average. December however rebounded to well above average precipitation. The Smith was 128 percent of average, the Judith was 140 percent of average and the Musselshell was 157 percent of average. The combined basin year-to-date precipitation is 112 percent of average and 82 percent of last year.

As of the end of December, the Smith River storage was 95 percent of average and 124 percent of last year; Ackley Lake was 124 percent of average and 144 percent of last year; Bair storage was 78 percent of average and 118 percent of last year; Martinsdale was 81 percent of average and 71 percent of last year; Deadman's Basin was 85 percent of average and 107 percent of last year.

Assuming average precipitation, the April through July combined basin forecast is to be in the 134 to 154 percent of average range.

# Smith-Judith-Musselshell

## Streamflow Forecasts - January 1, 2014

Forecast Exceedance Probabilities for Risk Assessment  
Chance that actual volume will exceed forecast

SMITH-JUDITH-MUSSELSHELL	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Sheep Ck nr White Sulphur Springs	APR-JUL	13.2	16.6	18.9	122%	21	25	15.5
	APR-SEP	15.7	19.6	22	120%	25	29	18.4
Smith R bl Eagle Ck <sup>2</sup>	APR-JUL	87	120	142	134%	164	197	106
	APR-SEP	97	135	161	139%	187	225	116
NF Musselshell R nr Delpine	APR-JUL	1.73	3.4	4.5	132%	5.6	7.3	3.4
	APR-SEP	2.1	4	5.3	133%	6.6	8.5	4
SF Musselshell R ab Martinsdale	APR-JUL	11.4	33	48	137%	63	85	35
	APR-SEP	13	36	52	137%	68	91	38
Musselshell R at Harlowton <sup>2</sup>	APR-JUL	17.2	55	80	140%	105	143	57
	APR-SEP	17.1	57	84	142%	111	151	59
Musselshell R nr Roundup <sup>2</sup>	APR-JUL	-20	48	103	154%	159	240	67
	APR-SEP	-20	50	106	161%	162	245	66

1) 90% and 10% exceedance probabilities are actually 95% and 5%

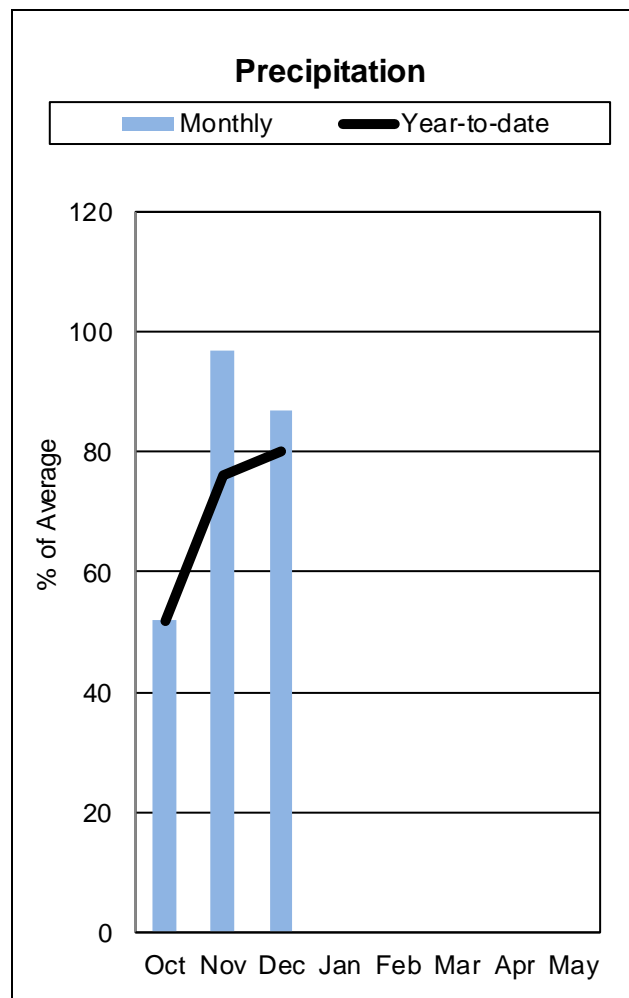
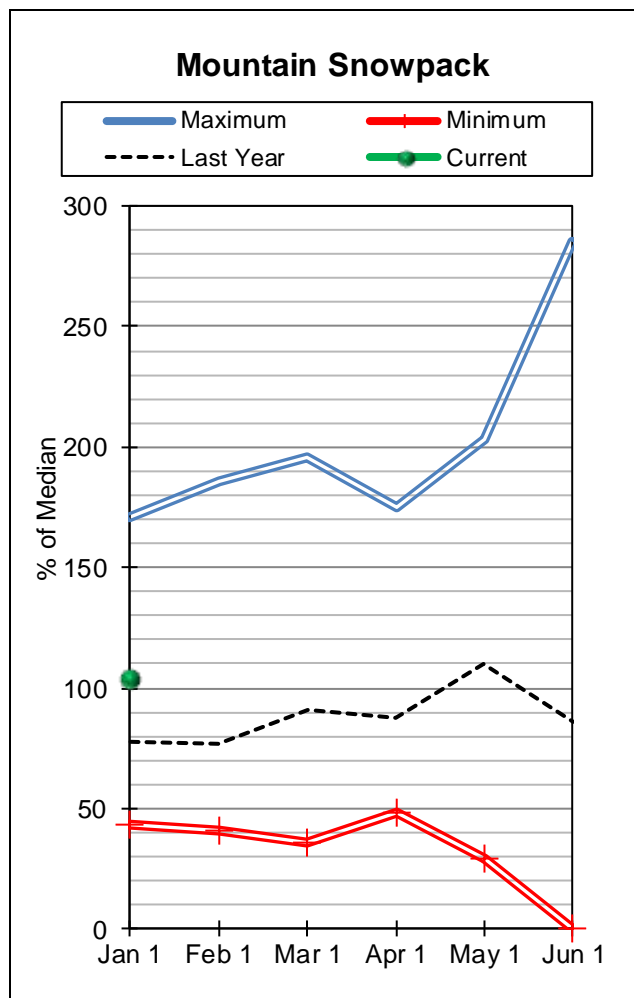
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

3) Median value used in place of average

Reservoir Storage End of December, 2013	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
SMITH RIVER RES	6.2	6.5	5.0	10.6
ACKLEY LAKE	3.6	2.9	2.5	7.0
BAIR RES	3.2	4.1	2.7	7.0
MARTINSDALE RES	5.5	6.8	7.7	23.1
DEADMAN'S BASIN RES	39.5	46.6	37.0	72.2
Basin-wide Total	58.0	66.9	54.9	119.9
# of reservoirs	5	5	5	5

Watershed Snowpack Analysis January 1, 2014	# of Sites	% Median	Last Year % Median
SMITH	6	146%	102%
HIGHWOOD	4	95%	109%
JUDITH	4	152%	97%
MUSSELSHELL	3	147%	104%
SMITH-JUDITH-MUSSELSHELL	10	146%	98%

## Sun-Teton-Marias River Basins



With respect to average, snowpack in the combined Sun-Teton-Marias River basins has started off the 2014 water year in good standing just above median at 104 percent according to SNOTEL and snow course data. When compared to other nearby major watersheds the combine Sun-Teton-Marias doesn't look quite as good. The Sun and Teton snowpacks are only slightly below median at 98 and 97 percent respectively while the Marias tips the seesaw at 108 percent weighting the combined basins just above average. SNOTEL data on January 1 indicates this year's snowpack is most reflective of the 1993, 1989, and 2008 water year at this point in time. Currently the total of all 8 reservoirs in the three basins is 96 percent of average and 97 percent of last year, a good starting point. SWSI values are all below the midpoint and range from -0.2 to -2.2. These values are driven in part by the streamflow forecasts which prove to be slightly below average for the larger waterways. The larger streams weigh more heavily in the SWSI equation such as the Inflow into Gibson Reservoir and the Marias River near Shelby forecasted at 93 and 98 percent of average respectively.



# Sun-Teton-Marias

## Streamflow Forecasts - January 1, 2014

Forecast Exceedance Probabilities for Risk Assessment  
Chance that actual volume will exceed forecast

SUN-TETON-MARIAS	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Gibson Reservoir Inflow	APR-JUL	210	280	330	84%	380	450	395
	APR-SEP	240	315	365	83%	415	490	440
Two Medicine R nr Browning <sup>2</sup>	APR-JUL	89	135	167	91%	200	245	183
	APR-SEP	97	145	177	91%	210	255	194
Badger Ck nr Browning	APR-JUL	47	69	83	94%	97	120	88
	APR-SEP	57	82	97	94%	112	136	103
Swift Reservoir Inflow <sup>2</sup>	APR-JUL	32	44	53	93%	62	74	57
	APR-SEP	41	54	64	96%	73	86	67
Dupuyer Ck nr Valier	APR-JUL	1.6	5.4	10.3	93%	15.2	22	11.1
	APR-SEP	1.8	6.4	11.8	93%	17.2	25	12.7
Cut Bank Ck nr Browning	APR-JUL	36	52	63	91%	74	90	69
	APR-SEP	39	56	68	91%	80	97	75
Marias R nr Shelby <sup>2</sup>	APR-JUL	132	250	330	96%	410	530	345
	APR-SEP	135	255	340	94%	425	545	360
Teton R nr Dutton	APR-JUL	5	10.8	30	71%	49	77	42
	APR-SEP	5.5	14.2	34	71%	54	84	48

1) 90% and 10% exceedance probabilities are actually 95% and 5%

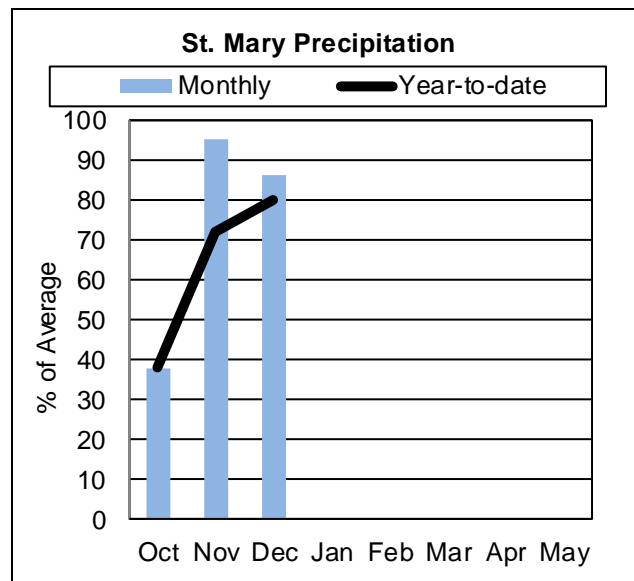
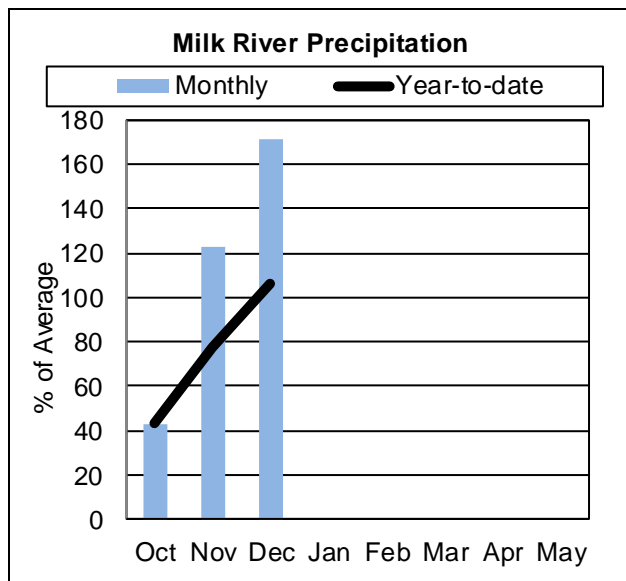
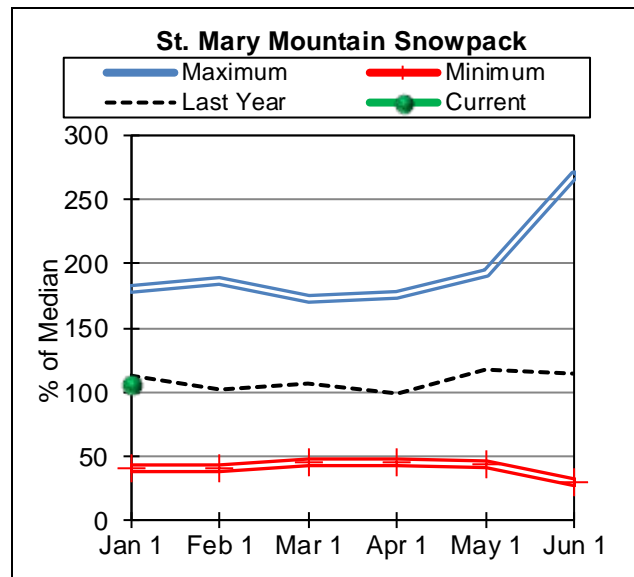
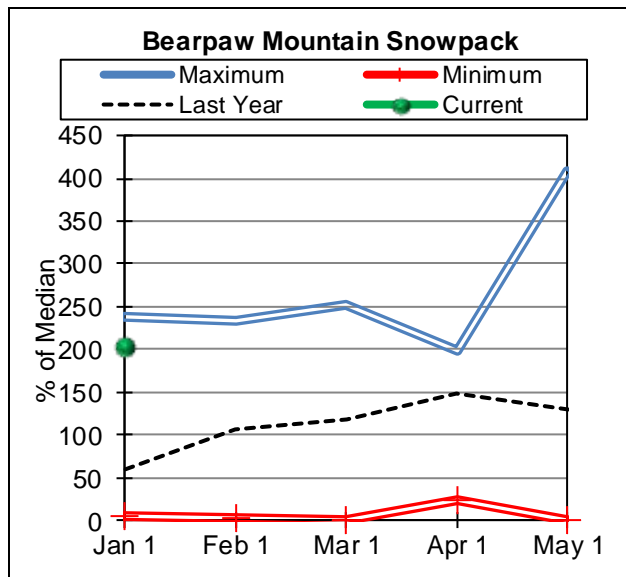
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

3) Median value used in place of average

Reservoir Storage End of December, 2013	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
GIBSON RES	10.2	15.2	36.4	99.1
PISHKUN RES	6.1	1.8	17.7	32.0
WILLOW CREEK	27.8	27.4	22.5	32.2
LOWER TWO MEDICINE LAKE	6.3	0.0	8.1	11.9
FOUR HORNS LAKE	11.2	9.9	10.4	19.2
SWIFT RES	10.8	12.0	13.8	30.0
LAKE FRANCES	34.9	40.3	57.6	112.0
LAKE ELWELL (TIBER)	743.8	772.6	715.9	1347.0
Basin-wide Total	851.1	879.2	882.4	1683.4
# of reservoirs	8	8	8	8

Watershed Snowpack Analysis January 1, 2014	# of Sites	% Median	Last Year % Median
SUN	4	95%	109%
TETON	3	97%	78%
MARIAS	3	114%	114%
SUN-TETON-MARIAS	5	102%	88%

## St. Mary and Milk River Basins



Again this year, a great start for the Milk River basin with respect to snowpack in the Bearpaw Mountains. Rocky Boy SNOTEL has more than double the median snowpack for January 1, Taylor Road snow course has three times its January 1 median. Keep in mind the median snow water equivalent for these sites is quite low, 2 inches and one inch respectively. So a little bit of snow goes a long way. Milk River reservoirs are on track with 2012 reservoir levels and are 149 percent of average and 59 percent of capacity. Streamflow forecasts are projected to be 97 percent of average. Forecasts and reservoirs are the two components of the SWSI in this basin and yield a SWSI at +1.4.

Snowpack in the combined St. Mary & Milk River basins is in the top 30<sup>th</sup> percentile of the last 34 years. The St. Mary having more snow than the Milk is the larger influence of the two. Because the St. Mary watershed mountains are at higher elevations than the mountains of the Milk watershed, the effects of the colder than average temperatures of October and November has not affected the snowpack of the St. Mary as it has the Milk. Currently St. Mary SNOTELs are showing snowpack levels at 106 percent of median, the weakest start since 2011. Streamflow projections for the April thru July timeframe range from 86 to 90 percent of average. Lake Sherburne is starting off at the normal January 1 levels. Surface Water Supply Index in the St. Mary is close to normal although slightly below due to the slightly below average streamflow forecasts.

# St. Mary & Milk Basins

## Streamflow Forecasts - January 1, 2014

Forecast Exceedance Probabilities for Risk Assessment  
Chance that actual volume will exceed forecast

ST. MARY & MILK BASINS	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Lake Sherburne Inflow								
	APR-JUL	74	86	94	97%	102	114	97
	APR-SEP	89	101	109	97%	118	130	112
St. Mary R nr Babb <sup>2</sup>								
	APR-JUL	265	315	350	95%	385	430	370
	APR-SEP	320	370	405	95%	440	495	425
St. Mary R at Intl Boundary <sup>2</sup>								
	APR-JUL	290	360	405	93%	455	525	435
	APR-SEP	350	420	470	93%	520	590	505
Milk R at Western Crossing of Intl Bndry, AB								
	MAR-SEP	1.98	17.7	28	80%	39	55	35
Milk R at Eastern Crossing of Intl Bndry								
	MAR-SEP	-10.2	32	60	73%	89	131	82

1) 90% and 10% exceedance probabilities are actually 95% and 5%

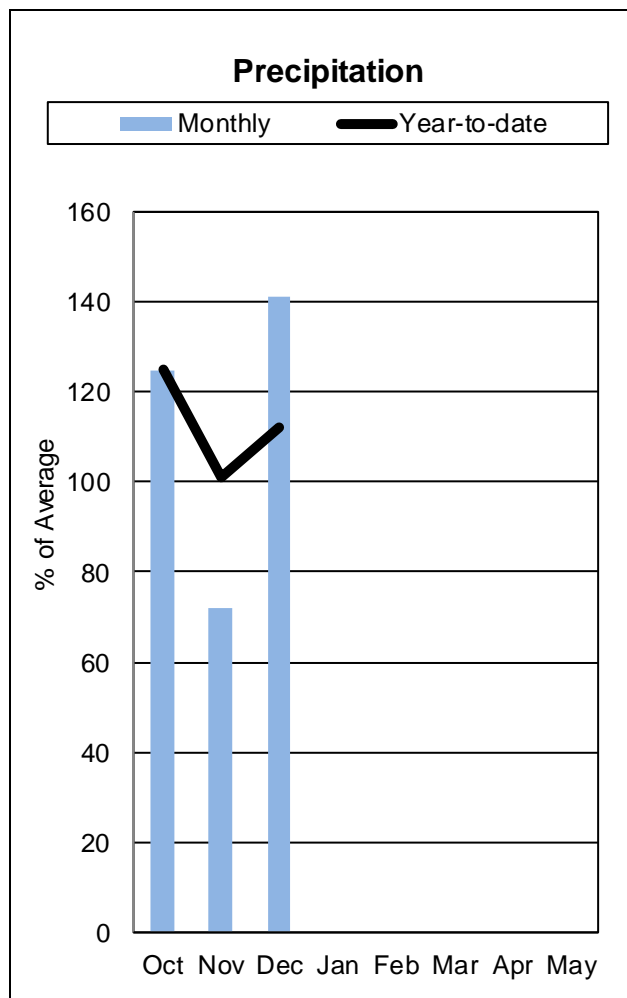
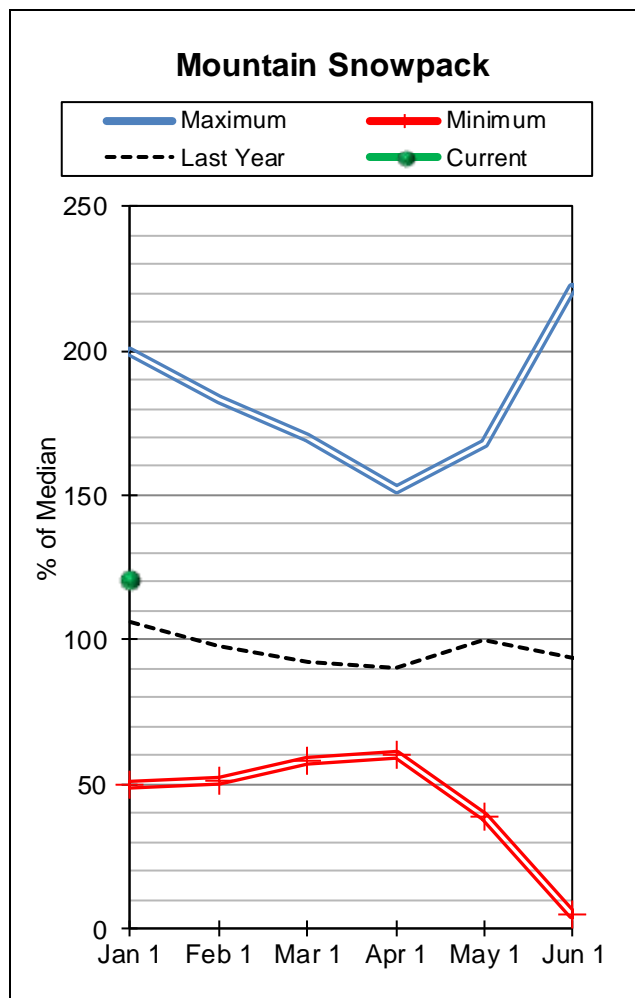
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

3) Median value used in place of average

Reservoir Storage End of December, 2013	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
SHERBURNE LAKE RESERVOIR	27.5	51.4	25.5	64.3
FRESNO RES	60.2	49.4	43.2	127.0
NELSON RES	53.4	45.0	33.0	66.8
Basin-wide Total	141.0	145.7	101.7	258.1
# of reservoirs	3	3	3	3

Watershed Snowpack Analysis January 1, 2014	# of Sites	% Median	Last Year % Median
ST. MARY	2	106%	113%
BEARPAW MOUNTAINS	1	210%	60%
CYPRESS HILLS, CANADA	0		
MILK RIVER BASIN	1	210%	60%
ST. MARY & MILK BASINS	3	114%	109%

## Upper Yellowstone River Basin



Southwest and South-central Montana saw favorable storm patterns and cooler than average temperatures during the beginning of the water year on Oct 1<sup>st</sup>, 2013, through January 1<sup>st</sup>, 2014. Snowfall in the Beartooth Range during the first week of November and into December helped Red Lodge Mountain Resort open earlier than it has in a decade. The early season snow and cold temperatures in December pushed the Upper Yellowstone River basin to 121 percent of normal snowpack and 115 percent of last year. Across the basin snowcourses and SNOTEL sites are measuring normal to well above normal with the Bridger and Crazy Mountain Ranges ranking highest in the basin. The January 1<sup>st</sup> April-July forecast for the Upper Yellowstone River basin based on current data is 102 percent of average and 129 percent of the observed flows last year.

# Upper Yellowstone River Basin Streamflow Forecasts - January 1, 2014

Forecast Exceedance Probabilities for Risk Assessment  
Chance that actual volume will exceed forecast

UPPER YELLOWSTONE RIVER BASIN	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Yellowstone R at Yellowstone Lake Outlet	APR-JUL	410	495	550	96%	605	690	575
	APR-SEP	545	650	725	94%	800	905	770
Yellowstone R at Corwin Springs	APR-JUL	1250	1460	1600	101%	1740	1940	1590
	APR-SEP	1460	1700	1870	99%	2030	2270	1880
Yellowstone R at Livingston	APR-JUL	1420	1660	1830	102%	1990	2230	1800
	APR-SEP	1670	1950	2140	100%	2330	2600	2140
Shields R nr Livingston	APR-JUL	65	125	166	129%	205	265	129
	APR-SEP	69	135	180	126%	225	290	143
Boulder R at Big Timber	APR-JUL	215	260	295	105%	325	375	280
	APR-SEP	230	285	320	107%	355	410	300
Mystic Lake Inflow <sup>2</sup>	APR-JUL	46	52	56	95%	60	66	59
	APR-SEP	59	67	72	97%	77	84	74
Stillwater R nr Absarokee <sup>2</sup>	APR-JUL	330	395	440	99%	480	545	445
	APR-SEP	390	465	515	99%	565	640	520
Clarks Fk Yellowstone R nr Belfry	APR-JUL	420	490	535	105%	580	645	510
	APR-SEP	460	535	585	106%	630	705	550
Cooney Reservoir Inflow	APR-JUL	19.1	32	41	108%	49	62	38
	APR-SEP	27	41	51	106%	60	74	48
Yellowstone R at Billings	APR-JUL	2480	2980	3320	103%	3660	4160	3230
	APR-SEP	2790	3380	3790	102%	4190	4780	3730

1) 90% and 10% exceedance probabilities are actually 95% and 5%

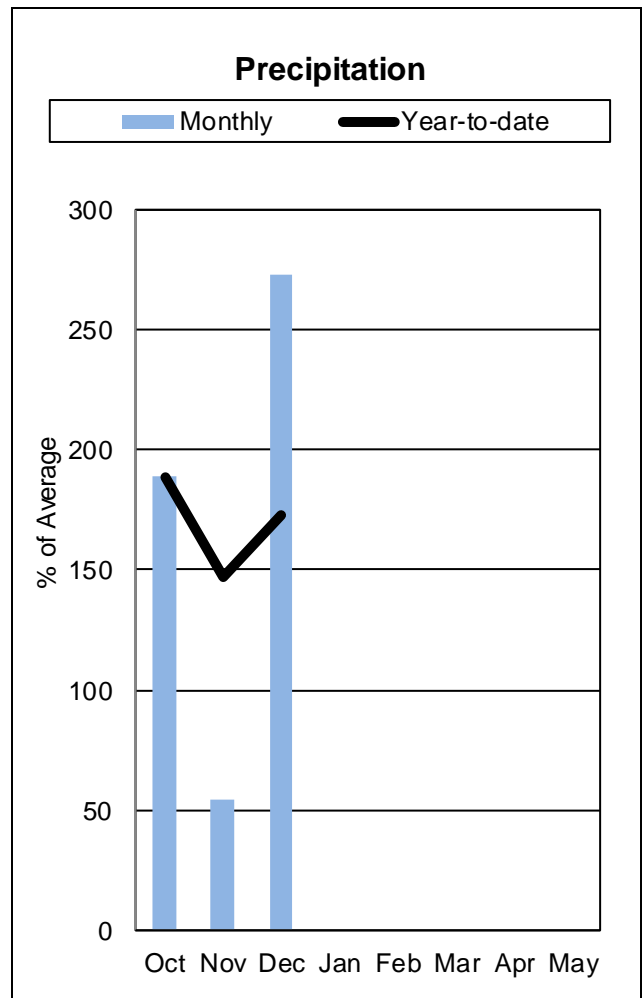
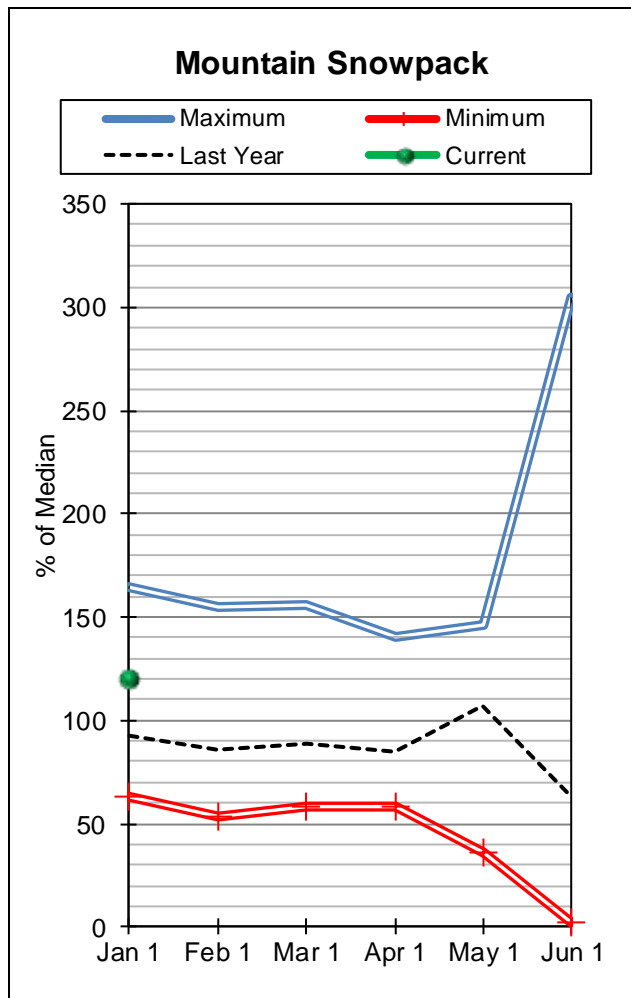
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

3) Median value used in place of average

Reservoir Storage End of December, 2013	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
MYSTIC LAKE	12.1	12.2	7.9	21.0
COONEY RES	15.1	16.7	16.6	27.4
Basin-wide Total	27.2	28.9	24.5	48.4
# of reservoirs	2	2	2	2

Watershed Snowpack Analysis January 1, 2014	# of Sites	% Median	Last Year % Median
YELLOWSTONE ab LIVINGSTON	12	106%	112%
SHIELDS	4	171%	102%
BOULDER-STILLWATER	3	121%	110%
RED LODGE-ROCK CREEK	3	128%	84%
CLARK'S FORK	7	118%	109%
UPPER YELLOWSTONE RIVER BASIN	26	120%	107%

## Lower Yellowstone River Basin



Ample fall moisture and continuing snow has treated the Lower Yellowstone River Basin pretty well so far this water year. The month of October brought 151 percent of average precipitation to the basin and started the seasonal snowpack in many areas at higher elevations. Water year precipitation from Oct 1<sup>st</sup> 2013 to Jan 1<sup>st</sup> 2014 in the basin is 108 percent of average and 92 percent of last year at mountain SNOTEL sites. November and December's storms followed by extended periods of cold dry air has helped the snowpack to continue building with the basin measuring 120 percent of normal snowpack and 132 percent of last year as of January 1<sup>st</sup>. The Big Horn Range in Wyoming has seen a few good storms roll in and is above normal for this time of year, while further south the Wind River Range has seen less regular storms and is below to slightly below average. The January 1<sup>st</sup> April-July forecast for the Lower Yellowstone River basin based on current data is 108 percent of average and 149 percent of the observed flows last year.

# Lower Yellowstone River Basin (Wyoming)

## Streamflow Forecasts - January 1, 2014

Forecast Exceedance Probabilities for Risk Assessment  
Chance that actual volume will exceed forecast

LOWER YELLOWSTONE RIVER BASIN (Wyoming)	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Bighorn R nr St. Xavier <sup>2</sup>	APR-JUL	980	1320	1550	112%	1790	2130	1380
	APR-SEP	1030	1410	1670	114%	1940	2320	1460
Little Bighorn R nr Hardin	APR-JUL	49	80	101	103%	122	153	98
	APR-SEP	58	91	114	103%	137	171	111
Tongue R nr Dayton <sup>2</sup>	APR-JUL	56	76	90	105%	104	124	86
	APR-SEP	67	88	103	105%	118	140	98
Big Goose Ck nr Sheridan	APR-JUL	27	39	47	102%	55	67	46
	APR-SEP	34	47	55	102%	63	75	54
Little Goose Ck nr Bighorn	APR-JUL	18.7	26	32	103%	37	45	31
	APR-SEP	26	34	40	103%	45	54	39
Tongue River Reservoir Inflow <sup>2</sup>	APR-JUL	89	156	200	104%	245	315	193
	APR-SEP	108	178	225	105%	275	345	215
Yellowstone R at Miles City <sup>2</sup>	APR-JUL	3630	4480	5060	106%	5640	6490	4780
	APR-SEP	4060	5060	5740	105%	6420	7410	5450
Powder R at Moorehead	APR-JUL	110	179	225	127%	270	340	177
	APR-SEP	129	200	250	128%	300	370	196
Powder R nr Locate	APR-JUL	115	199	255	128%	315	395	199
	APR-SEP	133	225	285	130%	345	435	220
Yellowstone R nr Sidney <sup>2</sup>	APR-JUL	3570	4540	5200	108%	5860	6830	4830
	APR-SEP	3890	5040	5820	107%	6590	7740	5430

1) 90% and 10% exceedance probabilities are actually 95% and 5%

2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

3) Median value used in place of average

Reservoir Storage End of December, 2013	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
BIGHORN LAKE	951.1	893.9	871.2	1356.0
TONGUE RIVER RES	49.9	44.6	26.4	79.1
Basin-wide Total	1001.1	938.5	897.6	1435.1
# of reservoirs	2	2	2	2

Watershed Snowpack Analysis January 1, 2014	# of Sites	% Median	Last Year % Median
WIND RIVER (Wyoming)	11	109%	97%
SHOSHONE RIVER (Wyoming)	4	119%	110%
BIGHORN RIVER (Wyoming)	14	129%	98%
LITTLE BIGHORN (Wyoming)	2	132%	61%
TONGUE RIVER (Wyoming)	6	110%	74%
POWDER RIVER (Wyoming)	6	143%	91%
LOWER YELLOWSTONE RIVER BASIN (Wyoming)	30	119%	92%

MONTANA	Network	Elevation	Depth (in)	SWE (in)	Median (in)	% Median	Last Year SWE (in)	Last Year % Median
ALBRO LAKE	SNOTEL	8300'	47	14.4	7.8	185%	8.7	112%
ASHLEY DIVIDE	SC	4820'	14	3.4	2.6	131%		
BADGER PASS	SNOTEL	6900'	49	13.9	12.5	111%	13.0	104%
BANFIELD MOUNTAIN	SNOTEL	5600'	27	6.7	7.8	86%	10.0	128%
BARKER LAKES	SNOTEL	8250'	32	7.9	5.9	134%	6.8	115%
BASIN CREEK	SNOTEL	7180'	24	6.0	3.6	167%	2.7	75%
BASIN CREEK	SC	7180'	25	6.4	3.0	213%	3.4	113%
BEAGLE SPRINGS	SNOTEL	8850'	22	4.2	3.8	111%	4.2	111%
BEAR MOUNTAIN	SNOTEL	5400'	53	19.0	22.9	83%	28.4	124%
BEARTOOTH LAKE	SNOTEL	9360'	46	10.8	10.0	108%	8.7	87%
BEAVER CREEK	SNOTEL	7850'	38	8.3	7.8	106%	10.6	136%
BISSON CREEK	SNOTEL	4920'	18	4.6	3.9	118%	2.0	51%
BLACK BEAR	SNOTEL	8170'	62	16.8	17.8	94%	20.5	115%
BLACK PINE	SNOTEL	7210'	19	4.2	4.2	100%	4.1	98%
BLACKTAIL	SC	5650'	23	4.4	5.4	81%		
BLACKTAIL MTN	SNOTEL	5650'	24	5.6			4.8	
BLOODY DICK	SNOTEL	7600'	28	6.1	5.0	122%	6.3	126%
BOULDER MOUNTAIN	SNOTEL	7950'	49	12.7	9.3	137%	8.9	96%
BOX CANYON	SNOTEL	6670'	23	4.0	3.7	108%	3.3	89%
BOXELDER CREEK	SC	5100'	17	3.9	2.5	156%		
BRACKETT CREEK	SNOTEL	7320'	49	13.3	7.0	190%	9.3	133%
BURNT MTN	SNOTEL	5880'	15	3.9	1.8	217%	1.1	61%
CALVERT CREEK	SNOTEL	6430'	18	3.3	3.4	97%	4.2	124%
CANYON	SNOTEL	7870'	27	5.3	5.5	96%	5.7	104%
CARROT BASIN	SNOTEL	9000'	51	11.5	12.3	93%	14.7	120%
CHESSMAN RESERVOIR	SC	6200'	7	1.2	1.4	86%		
CLOVER MEADOW	SNOTEL	8600'	30	6.6	7.8	85%	6.1	78%
COLE CREEK	SNOTEL	7850'	32	8.5	6.3	135%	3.5	56%
COMBINATION	SNOTEL	5600'	6	1.3	2.0	65%	1.9	95%
COPPER BOTTOM	SNOTEL	5200'	9	2.8			2.4	
COPPER CAMP	SNOTEL	6950'	47	14.9			22.0	
COYOTE HILL	SC	4200'	17	4.1	3.2	128%	2.3	72%
CRYSTAL LAKE	SNOTEL	6050'	34	7.5	5.1	147%	3.2	63%
DAISY PEAK	SNOTEL	7600'	27	5.9	4.1	144%	4.1	100%
DALY CREEK	SNOTEL	5780'	18	4.2	4.5	93%	4.6	102%
DARKHORSE LAKE	SNOTEL	8600'	58	16.3	12.9	126%	15.4	119%
DEADMAN CREEK	SNOTEL	6450'	32	6.6	4.0	165%	4.3	108%
DISCOVERY BASIN	SC	7050'	15	3.2	3.8	84%	3.9	103%
DIVIDE	SNOTEL	7800'	21	3.8	4.4	86%	5.4	123%
DIX HILL	SC	6400'	13	2.4	3.9	62%	3.4	87%
DUPUYER CREEK	SNOTEL	5750'	12	2.7	3.4	79%	1.2	35%
EAST BOULDER MINE	SNOTEL	6335'	13	2.5			1.1	
ELK PEAK	SNOTEL	7600'	47	14.1			11.9	
EMERY CREEK	SNOTEL	4350'	33	8.7	5.9	147%	6.3	107%
FISH CREEK	SC	8000'	31	8.2	3.6	228%	4.0	111%
FISHER CREEK	SNOTEL	9100'	63	15.9	14.7	108%	19.1	130%
FLATTOP MTN.	SNOTEL	6300'	74	19.4	18.5	105%	22.6	122%
FROHNER MEADOW	SNOTEL	6480'	16	3.3	3.1	106%	3.5	113%
GARVER CREEK	SNOTEL	4250'	17	3.3	4.7	70%	5.7	121%
GRAVE CREEK	SNOTEL	4300'	35	8.9	6.6	135%	5.2	79%
HAND CREEK	SNOTEL	5035'	26	5.5	4.2	131%	4.1	98%
HAWKINS LAKE	SNOTEL	6450'	32	8.4	10.5	80%	14.3	136%
HEBGEN DAM	SC	6550'	20	3.4	4.0	85%	3.0	75%
HELL ROARING DIVIDE	SC	5770'	52	14.7	11.0	134%	16.0	145%
HOLBROOK	SC	4530'	12	2.8	3.2	88%	2.1	66%



<b>MONTANA</b>	Network	Elevation	Depth (in)	SWE (in)	Median (in)	% Median	Last Year SWE (in)	Last Year % Median
HOODOO BASIN	SNOTEL	6050'	50	13.3	16.6	80%	17.2	104%
HUMBOLDT GULCH	SNOTEL	4250'	22	5.1	5.7	89%	4.4	77%
JOHNSON PARK	SC	6450'	12	2.5	2.0	125%	2.9	145%
KRAFT CREEK	SNOTEL	4750'	36	7.8			3.3	
LAKE CAMP	SC	7780'	19	3.6	4.0	90%		
LAKEVIEW RIDGE	SNOTEL	7400'	16	2.5	4.9	51%	6.3	129%
LEMHI RIDGE	SNOTEL	8100'	30	6.5	4.5	144%	4.2	93%
LICK CREEK	SNOTEL	6860'	20	5.0	4.4	114%	3.6	82%
LOLO PASS	SNOTEL	5240'	41	9.9	11.0	90%	8.6	78%
LONE MOUNTAIN	SNOTEL	8880'	37	8.6	7.7	112%	8.7	113%
LOOKOUT	SNOTEL	5140'	32	7.7	11.9	65%	9.7	82%
LOWER TWIN	SNOTEL	7900'	41	11.2	8.2	137%	8.3	101%
LUBRECHT FLUME	SNOTEL	4680'	6	1.6	2.4	67%	1.6	67%
LUBRECHT FOREST NO 3	SC	5450'	11	1.9	2.2	86%	1.3	59%
LUBRECHT FOREST NO 4	SC	4650'	3	0.6	1.2	50%	0.8	67%
LUBRECHT FOREST NO 6	SC	4040'	4	1.0	1.3	77%	1.2	92%
LUBRECHT HYDROPLOT	SC	4200'	7	1.5	2.0	75%	1.2	60%
LUPINE CREEK	SC	7380'	12	2.2	3.4	65%	5.0	147%
MADISON PLATEAU	SNOTEL	7750'	39	9.0	10.3	87%	12.5	121%
MANY GLACIER	SNOTEL	4900'	24	5.7	5.2	110%	4.2	81%
MARIAS PASS	SC	5250'	28	6.9	5.8	119%		
MONUMENT PEAK	SNOTEL	8850'	52	10.9	8.8	124%	11.6	132%
MOSS PEAK	SNOTEL	6780'	66	18.3	14.3	128%	15.5	108%
MOULTON RESERVOIR	SC	6850'	14	2.7	2.8	96%	2.4	86%
MOUNT LOCKHART	SNOTEL	6400'	31	8.2	8.0	103%	7.3	91%
MULE CREEK	SNOTEL	8300'	34	7.7	6.3	122%	7.7	122%
N FK ELK CREEK	SNOTEL	6250'	22	5.1	4.5	113%	4.1	91%
NEVADA RIDGE	SNOTEL	7020'	25	5.7	5.6	102%	5.9	105%
NEZ PERCE CAMP	SNOTEL	5650'	23	5.8	5.8	100%	5.0	86%
NOISY BASIN	SNOTEL	6040'	74	21.2	16.1	132%	18.0	112%
NORRIS BASIN	SC	7550'	22	4.0	4.3	93%	3.7	86%
NORTH FORK JOCKO	SNOTEL	6330'	84	20.6	17.6	117%	14.7	84%
NORTHEAST ENTRANCE	SNOTEL	7350'	22	4.5	4.1	110%	3.2	78%
ONION PARK	SNOTEL	7410'	32	7.2	5.4	133%	4.5	83%
OPHIR PARK	SC	7150'	21	5.0	5.7	88%	5.3	93%
PARKER PEAK	SNOTEL	9400'	56	12.3	9.9	124%	10.7	108%
PETERSON MEADOWS	SNOTEL	7200'	20	4.8	4.0	120%	4.1	103%
PICKFOOT CREEK	SNOTEL	6650'	27	6.3	4.7	134%	4.9	104%
PIKE CREEK	SNOTEL	5930'	17	3.7			4.6	
PLACER BASIN	SNOTEL	8830'	52	10.2	8.2	124%	7.8	95%
POORMAN CREEK	SNOTEL	5100'	48	13.8	12.6	110%	15.2	121%
PORCUPINE	SNOTEL	6500'	21	3.8	2.2	173%	1.6	73%
ROCKER PEAK	SNOTEL	8000'	31	7.3	6.0	122%	4.7	78%
ROCKY BOY	SNOTEL	4700'	18	4.2	2.0	210%	1.2	60%
ROCKY BOY	SC	4700'	9	2.1	1.0	210%		
S FORK SHIELDS	SNOTEL	8100'	43	10.0	6.5	154%	4.7	72%
SACAJAWEA	SNOTEL	6550'	37	9.2	5.5	167%	6.0	109%
SADDLE MTN.	SNOTEL	7940'	50	13.0	10.5	124%	10.7	102%
SHORT CREEK	SNOTEL	7000'	10	2.1	2.5	84%	2.9	116%
SHOWER FALLS	SNOTEL	8100'	51	10.5	9.0	117%	7.7	86%
SKALKAHO SUMMIT	SNOTEL	7250'	35	7.9	8.7	91%	9.3	107%
SLEEPING WOMAN	SNOTEL	6150'	26	5.5	6.1	90%	5.2	85%
SPOTTED BEAR MOUNTAIN	SC	7000'	22	5.3	5.3	100%	5.1	96%
SPUR PARK	SNOTEL	8100'	54	13.7	9.0	152%	10.0	111%
STAHL PEAK	SNOTEL	6030'	55	15.4	15.1	102%	13.6	90%
STORM LAKE	SC	7780'	23	5.6	5.1	110%	5.4	106%
STRINGER CREEK	SNOTEL	6550'	30	6.5	4.0	163%	4.5	113%

<b>MONTANA</b>	Network	Elevation	Depth (in)	SWE (in)	Median (in)	% Median	Last Year SWE (in)	Last Year % Median
STUART MOUNTAIN	SNOTEL	7400'	48	12.6	13.4	94%	14.0	104%
TAYLOR ROAD	SC	4080'	14	3.0	1.0	300%		
TEN MILE LOWER	SC	6600'	16	4.2	2.7	156%		
TEN MILE MIDDLE	SC	6800'	23	5.8	4.3	135%		
TEPEE CREEK	SNOTEL	8000'	26	4.0	6.2	65%	6.8	110%
TIZER BASIN	SNOTEL	6880'	18	5.2	4.7	111%	4.0	85%
TRINKUS LAKE	SC	6100'	68	19.7	16.9	117%	19.1	113%
TRUMAN CREEK	SC	4060'	7	1.0	1.9	53%		
TWELVEMILE CREEK	SNOTEL	5600'	22	4.8	6.6	73%	5.8	88%
TWENTY-ONE MILE	SC	7150'	26	4.2	5.9	71%	8.0	136%
TWIN LAKES	SNOTEL	6400'	51	11.9	16.1	74%	13.0	81%
UPPER HOLLAND LAKE	SC	6200'	56	14.8	13.0	114%	11.2	86%
WALDRON	SNOTEL	5600'	18	4.2	4.1	102%	3.6	88%
WARM SPRINGS	SNOTEL	7800'	40	9.2	8.6	107%	7.9	92%
WEASEL DIVIDE	SC	5450'	47	13.6	12.6	108%	14.2	113%
WEST YELLOWSTONE	SNOTEL	6700'	25	4.8	4.7	102%	4.3	91%
WEST YELLOWSTONE	SC	6700'	20	3.8	4.1	93%	3.2	78%
WHISKEY CREEK	SNOTEL	6800'	30	6.3	6.7	94%	5.3	79%
WHITE ELEPHANT	SNOTEL	7710'	35	9.0	11.5	78%	17.2	150%
WHITE MILL	SNOTEL	8700'	50	11.9	9.9	120%	11.7	118%
WOLVERINE	SNOTEL	7650'	28	6.2	4.8	129%	4.4	92%
WOOD CREEK	SNOTEL	5960'	14	3.0	3.3	91%	2.4	73%
<b>Basin Index</b>						<b>110%</b>		<b>103%</b>
# of sites						116		116

*Issued by: Released by:*

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**Montana**  
**Water Supply Outlook**  
**Report**  
Natural Resources Conservation Service

